

MECHANICAL SHEAR

OPERATOR'S MANUAL

AMADA

M-SHEAR-E07-199607

PREFACE Read this manual carefully to obtain a thorough knowledge of machine operation and maintenance. Be sure to follow the instructions to ensure proper procedures and prevent injuries and accidents. Do not operate the machine by guesswork. Keep the manual at hand and refer to it whenever you are not sure of how to perform any of the procedures.

Operator's Manual: MECHANICAL SHEAR

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- a)* Appoint a chief machine operator who is responsible for the safety of other people working with the machine. Instruct him to carefully read the manual and educate him on safety.
- b)* Keep the keys of the POWER ON/OFF and MODE keyswitches in the custody of the chief machine operator.
- c)* Never modify the machine. Modification of the machine and its accessory devices may cause the malfunction of the machine and its accessory devices.
- d)* Allow the machine to be operated by only those people who have received safety education.
- e)* Never operate the machine with loose clothing. It is very dangerous if such clothing is caught in the machine.
- f)* Be sure to inspect the machine before the start of the day's work.
- g)* Before operating the machine, check that protective devices such as the covers and finger protector are installed in place. Never operate the machine with the protective devices removed or opened. Doing so may cause a serious injury.

SAFETY RULES

- h)** Before starting the cutting operation, check that there are no workers and obstacles around the machine. Pay particular attention to the rear of the machine. Never leave tools and the like on the table and ram.
- i)** When operating the machine with another or more workers, check each other's safety while signaling by voice to each other.
- j)** There is an enough opening to load a worksheet between the finger protector and the table. When performing the cutting operation, never put the fingers into this opening. Otherwise you may have the fingers cut by the blades or crushed by the holdowns. When cutting a worksheet with very narrow margins to hold, use tools and load the worksheet not to put the fingers into the opening.
- k)** When cutting a worksheet, you may have the hands caught between the worksheet and the table in a very dangerous manner. Hold each worksheet by paying due attention to this hazard.
- l)** Before removing the blanks or scrap that has dropped into the machine, be sure to turn the SHEAR STOP switch to ON. Never reach through the frame gap to remove the blanks or scrap.
- m)** Press the Emergency Stop button as soon as a trouble occurs during the operation of the machine. The Emergency Stop button is located at the front of the machine.
- n)** Before maintaining, inspecting, or adjusting the machine, stop the air supply, turn the POWER ON/OFF keyswitch to "O" (OFF), remove the key from the keyswitch, and keep the key by oneself.
 Before opening the electrical enclosure, be sure to turn off the shop circuit breaker. Never touch any part in the electrical enclosure. Otherwise you may suffer an electric shock.
 Post a sign to notify other workers that maintenance, inspection, or adjustment is performed on the machine.
 Adjusting the machine and changing the blades are very dangerous. Ask the specially trained workers or the AMADA service engineers to carry out these procedures.

DANGER, WARNING, and CAUTION plates

Strictly observe what is written on the DANGER, WARNING, and CAUTION plates. Keep these plates well noticeable, and never remove them.

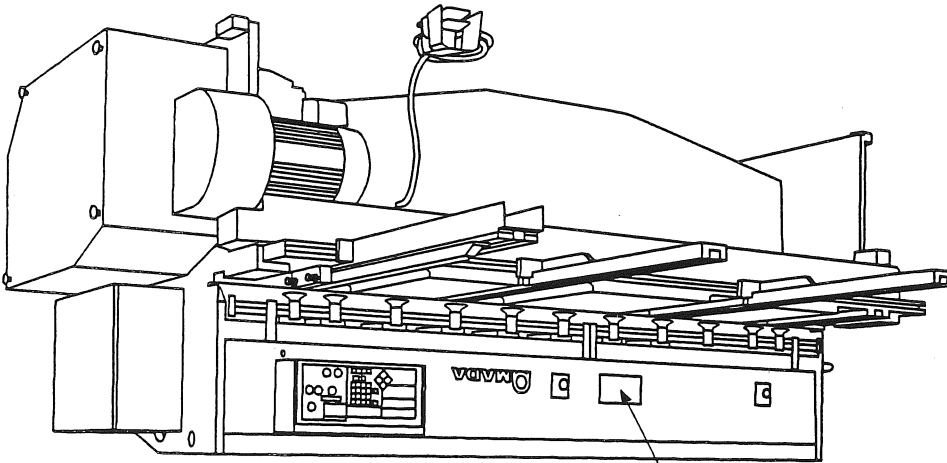
Hazard seriousness level



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

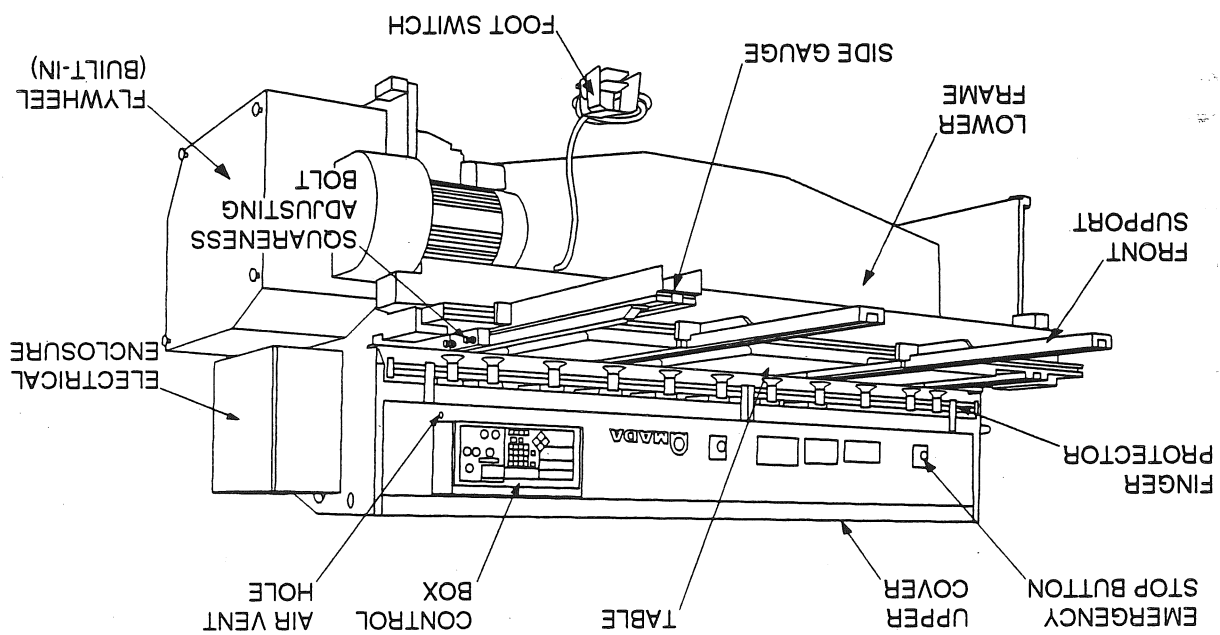
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Names of main parts.....I-2
Specifications.....I-3
Machine specifications.....I-3
Standard accessories.....I-5

Part I
Description



NAMES OF MAIN PARTS

SPECIFICATIONS

Machine specifications

Item		Model			
Maximum worksheet thickness, mm (in.) (Tensile strength of 45 kg/mm ² or 6400 psi)	4.5 (0.18)	6.5 (0.26) 6.0 (0.235)	4.5 (0.18)	6.5 (0.26)	6.0 (0.235)
Maximum cutting length, mm (in.)	1240 (48.82)	2000 (78.74)	2500 (98.43)		
Blade length, mm (in.)	1340 (52.7)	2300 (90.5)	2800 (110.2)		
Blade type	Four-edged blade				
Gap depth, mm (in.)	65 (2.56)				
Rake angle	1°28'		1°18'	1°28'	1°18'
No. of strokes (spm)	75	60			
Main motor, kW (HP)	3.7 (5)	5.5 (7.5)			
Backgauge motor, kW (HP)	0.4 (0.5)				
Machine weight, kg (lb)	2700 (5952)	3700 (8157)	4600 (10141)	4700 (10361)	5300 (11684)
Holddown system	Hydraulic				
Holddown quantity	6	9		11	
Beam light (No. of bulbs)	40 W x 2		40 W x 3		
Backgauge system	Numeric key entry, LED display in 0.1 mm (0.004 in.) increments, automatic cutting device				
Backgauge travel range, mm	10 to 700				
Lubrication system	Manual centralized lubrication (with lubrication monitors for main bearings)				
Operating modes	Single cutting, continuous cutting, automatic cutting, and inching				

Model					Item	
M-2560	M-3045	M-3060	M-4045	M-4065		
Maximum worksheet thickness, mm (in.)	6.5 (0.26)	4.5 (0.18)	6.5 (0.26)	4.5 (0.18)	6.5 (0.26)	
(Tensile strength of 45 kg/mm ² or 6400 psi)	6.0 (0.231)	6.0 (0.231)	6.0 (0.231)	6.0 (0.231)	6.0 (0.231)	
Maximum cutting length, mm (in.)	2500 (98.43)	3070 (120.87)	4055 (159.65)			
Blade length, mm (in.)	2800 (110.2)	3380 (133.0)	4430 (174.4)			
Blade type	Four-edged blade					
Gap depth, mm (in.)	65 (2.56)					
Rake angle	1°28'	1°18'	1°28'	1°18'	1°28'	
No. of strokes (spm)	60			50	52	
Main motor, kW (HP)	7.5 (10)		11.0 (15)			
Backgauge motor, kW (HP)	0.4 (0.5)					
Machine weight, kg (lb)	5500 (12125)	7100 (15653)	8400 (18519)	11000 (24251)	14000 (30865)	
Holddown system	Hydraulic					
Holddown quantity	11	13	16			
Beam light (No. of bulbs)	40 W x 3	40 W x 4	40 W x 5			
Backgauge system	Numeric key entry, LED display in 0.1 mm (0.004 in.) increments, automatic cutting device					
Backgauge travel range, mm	10 to 700		10 to 1000			
Lubrication system	Manual centralized lubrication (with lubrication monitors for main bearings)					
Operating modes	Single cutting, continuous cutting, automatic cutting, and inching					

STANDARD ACCESSORIES

Model	Side gauge	Front support	Front stopper	Beam light bulb	Fuse		
					5 A	10 A	15 A
M-1245	1	1	2	2	2	2	2
M-1260	1	1	2	2	2	2	2
M-2045	1	1	2	2	2	2	2
M-2060	1	1	2	2	2	2	2
M-2545	1	1	2	2	2	2	2
M-2560	1	1	2	2	2	2	2
M-3045	1	1	2	2	2	2	2
M-3060	1	1	2	2	2	2	2
M-4045	1	1	2	2	2	2	2
M-4065	1	1	2	2	2	2	2

- Tool box 1
- Flat-tipped screwdriver 1
- Phillips screwdriver 1
- Allen wrench : 3, 4, 5, 6, 8, 14, 17 mm 1 each
(Add 10 and 19 mm Allen wrenches for M-4045 and M-3060)
- Double-ended wrench : 8 × 10 2
- 13 × 17 2 (1 for M-3060)
- 22 × 24 1
- 24 × 27 1
- 30 × 32 1
- Single-ended wrench : 36 2 (1 each for M-3045 and M-4045)
- 46 1
- 50 1 (only for M-3060)

11-2 Location.....

11-2 Foundation.....

11-3 Carrying.....

11-4 Anchoring.....

11-5 Leveling.....

11-6 Installing side gauge and front support.....

11-6 Installing side gauge.....

11-7 Installing front support.....

11-8 Supplying electric power.....

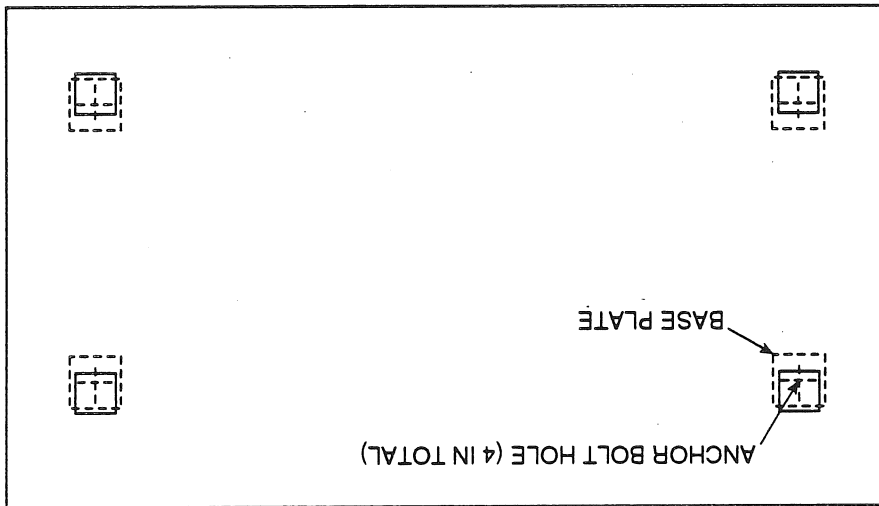
11-8 Changing wiring connections.....

11-10 Connecting power cable.....

11-11 Checking wiring connections.....

Part II

Installation



Perform the foundation work of the machine according to the foundation drawing provided by AMADA. Be sure to place base plates on holes made in the foundation to bury anchor bolts.

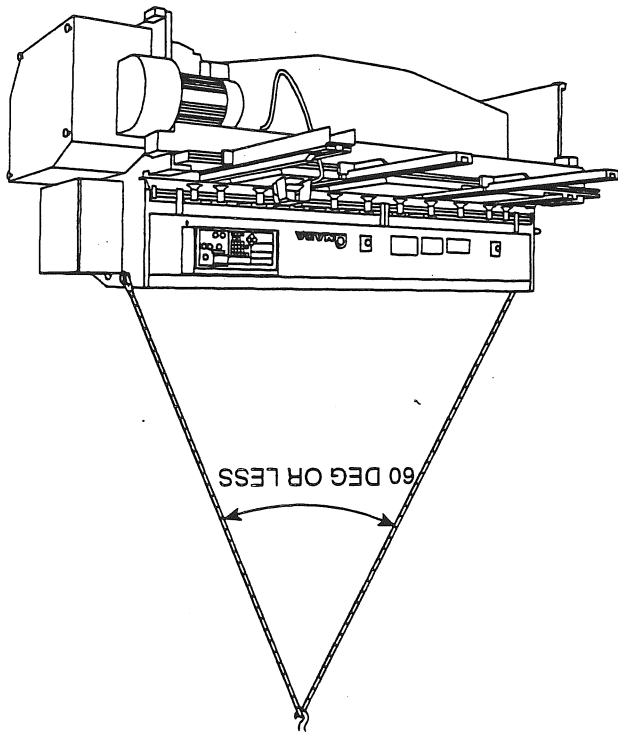
FOUNDATION

- Do not expose the machine to direct sunlight.
- Near the machine, do not use any other machine that may produce vibration or dust.


NOTICE

Select such a location where enough space can be provided around the machine for loading and unloading the worksheets and for performing maintenance and inspection on the machine. The maintenance and inspection require a space of 1 m around the machine.

LOCATION



Attach shackles to the holes at the left and right sides of the machine, and apply the wire rope sling to the shackles. Lift the machine with the crane while carefully balancing it, and carry it to the location. Slowly lower the machine without impact, and place it onto the base plates. For the machine weight, refer to "Machine specifications" on pages I-3 and I-4.

	<p>WARNING</p> <ul style="list-style-type: none"> ● Carrying the machine is not only likely to damage it, but also very dangerous. Be sure to have the machine carried by a qualified contractor. ● Use a crane and wire rope sling strong enough to support the weight of the machine.
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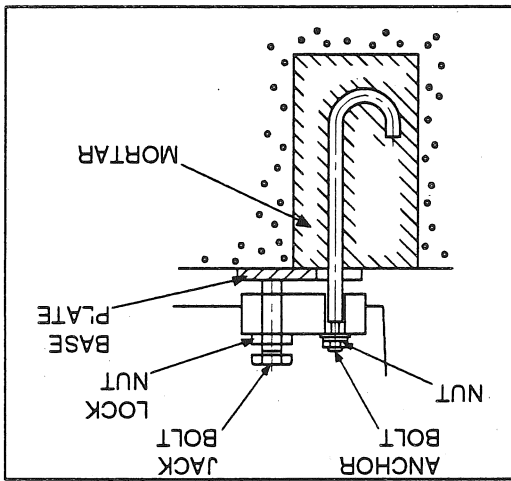
When the machine is directly delivered by AMADA, it will be carried by a contractor. Tell the carrier where to install the machine. When moving the machine due to shop layout change, for example, carry it as described below.

CARRYING

ANCHORING

When the machine is lowered on the location, anchor it as described below.

- 1 Put the anchor bolt through the clearance between the base plate and anchor bolt burial hole, insert it into the anchor bolt hole in the leg of the machine, and attach the nut to its head.



- 2 Turn the jack bolt to level the machine to approximately 0.5 mm per 1 m.
- 3 Pour mortar into the anchor bolt burial hole, and allow it to dry. (The mortar will be completely dried in about 7 to 10 days.)

- 4 When the mortar is dried, accurately level the machine as described in "Leveling" on next page.

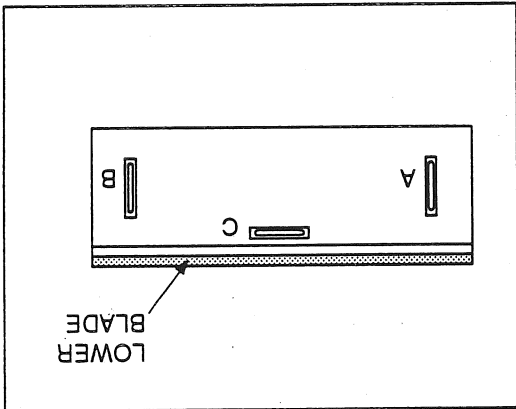
LEVELLING

When the mortar in the anchor bolt burial holes is completely dried, level the machine with spirit levels as described below.

1 Loosen the lock nut of the jack bolt.

2 Clean the table with waste cloth.

3 Place a spirit level in either of the positions A and B, and adjust the level of the machine.



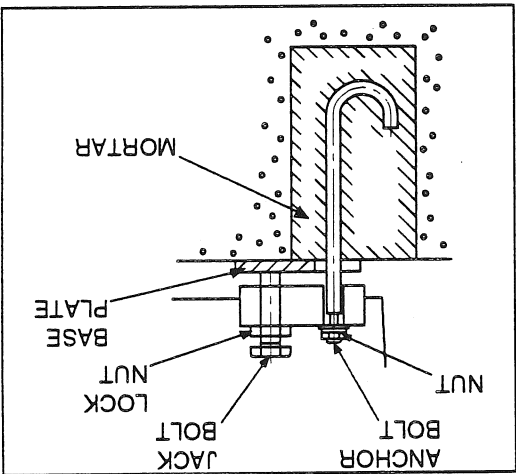
(1) Turn the jack bolt until the spirit level reads 0.05 mm or less per 1 m.

(2) Put another spirit level at the other position A or B.

(3) Turn the jack bolt until the spirit level reads 0.05 mm or less per 1 m.

4 Put a spirit level at the position C.

5 While taking care not to change the level established at the positions A and B, turn the jack bolt until the spirit level reads 0.05 mm or less per 1 m.



6 When the levelling of the machine is completed, securely tighten the lock nut of each jack bolt and the nut of each anchor bolt to fix the machine in place.

INSTALLING SIDE GAUGE AND FRONT SUPPORT

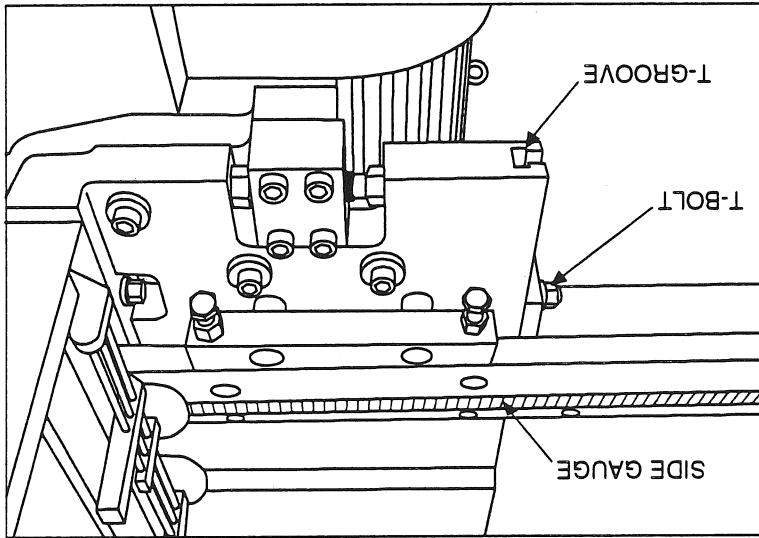
When the leveling of the machine is completed, install the side gauge and front support.

Installing side gauge

Install the side gauge as described below.

1 Remove the two T-bolts attached to the side gauge.

2 Insert the T-bolts into the T-groove at the front end of the table, move them into the positions to fix the side gauge, and set their distance at the distance of the flange holes in the side gauge.



3 Put the T-bolts into the flange holes in the side gauge, and finger tighten the nuts. Also finger tighten the accessory bolts on the table.

NOTICE

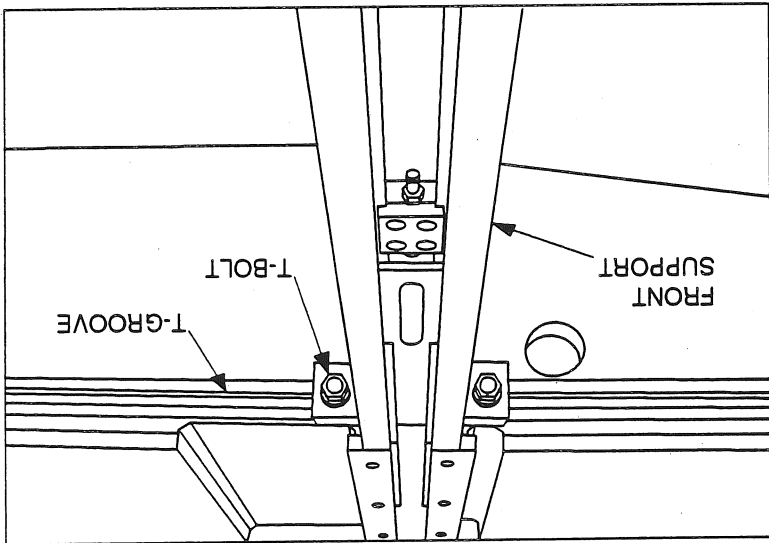
● When installing the side gauge at the right side of the machine, install it as delivered. When installing the side gauge at the left side of the machine, disassemble it, modify it for left-side installation, and install it at the left side of the machine.

4 Using the front stopper, adjust the side gauge top-to-bottom and left-to-right until the side gauge groove aligns with the table groove. Securely tighten the T-bolt nuts and the table bolts to completely fix the side gauge.

Installing front support

Install the front support as described below.

- 1 Remove the two T-bolts from the front support.
- 2 Insert the T-bolts into the T-groove at the front end of the table, move them into the stopper positions on the table (front support installing positions), and set their distance at the distance of the flange holes in the front support.



- 3 Put the T-bolts into the flange holes in the front support, and finger tighten the nuts.

- 4 Using the front stopper, adjust the front support top-to-bottom and left-to-right until the front support groove aligns with the stopper groove on the table. Securely tighten the nuts to completely fix the front support.

SUPPLYING ELECTRIC POWER

WARNING

- Have a qualified electrician make the necessary electrical connections.
- Be sure to ground the machine.

CAUTION

- Prepare an electric capacity slightly larger than the specified electric power consumption. Ask the electric power company to keep the voltage fluctuation within 10% of the rated voltage.

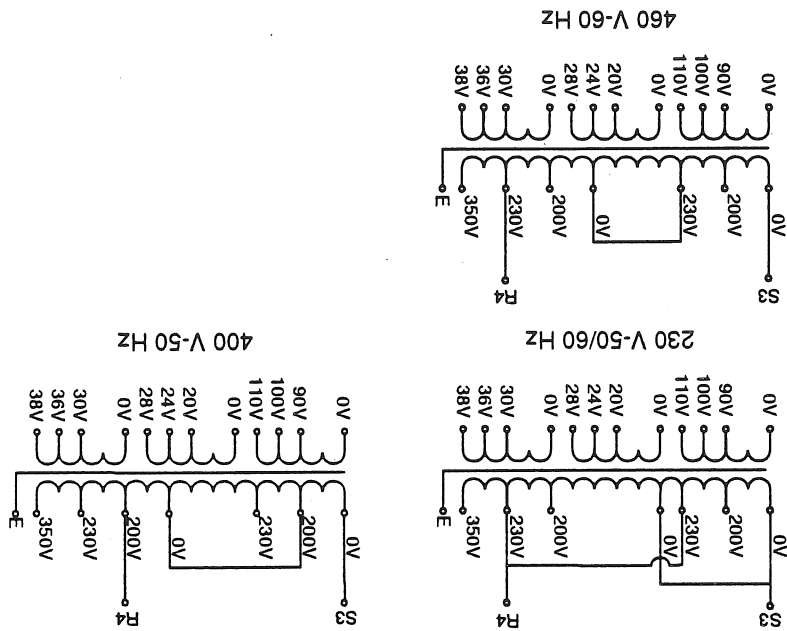
- Prepare the following to meet the electrical requirements of the machine:
- Power supply
230/400/460 V (±10%), AC, 50/60 Hz, 3 phases, 1550 VA
A circuit breaker rated for the power supplied
 - Power cable
A power cable of such a size as to suit the power supplied.

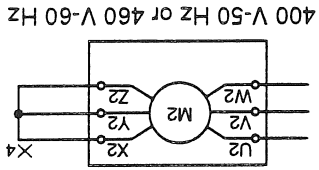
Changing wiring connections

The power supply of the machine should meet the voltage indicated on the label attached to the electrical enclosure. If not, change the wiring connections of the motor and transformer as described below, and reset or change the thermal relay. Also change the inverter of the backgauging motor as well as the values set at the inverter parameters. For the procedure for changing the parameter values, refer to the circuit diagrams.

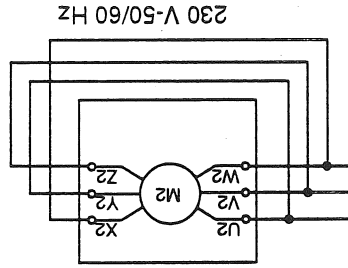
Changing wiring connections at transformer terminals

- Machine transformer



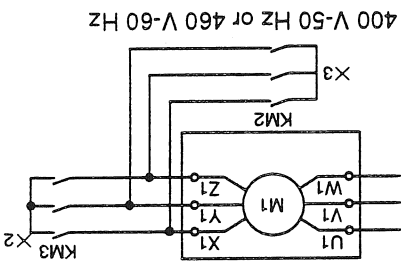


400 V-50 Hz or 460 V-60 Hz

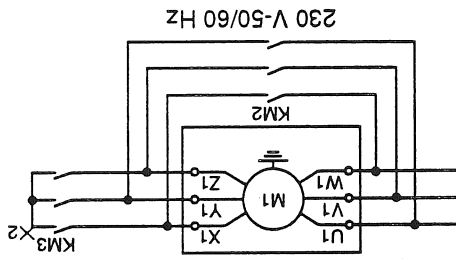


230 V-50/60 Hz

• Backgauge motor terminals

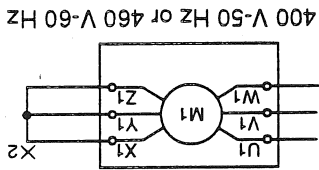


400 V-50 Hz or 460 V-60 Hz

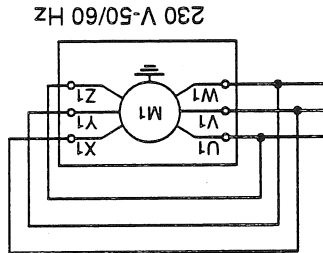


230 V-50/60 Hz

• Main motor terminals (For Models M-2060, -2560, -3045, -3060, -4045, and -4065)



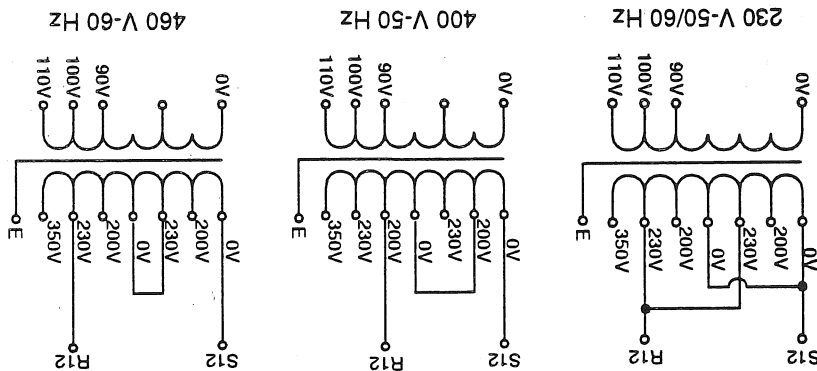
400 V-50 Hz or 460 V-60 Hz



230 V-50/60 Hz

• Main motor terminals (For Models M-1245, -1260, -2045, and -2545)

Changing wiring connections at motor terminals

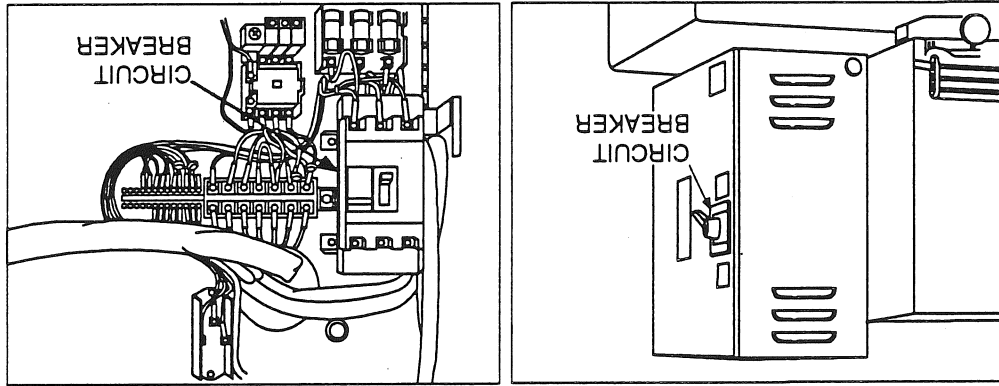


• Auxiliary transformer (When optional blade clearance control panel is added)

Connecting power cable

Connect the power cable as described below.

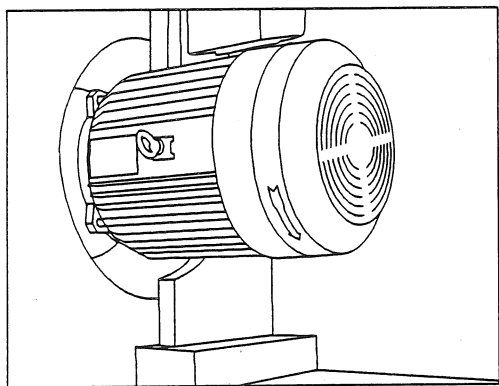
- 1 Turn off the shop circuit breaker.
- 2 Loosen the two screws, turn the handle of the machine circuit breaker to "Reset Open," and open the electrical enclosure.
- 3 Introduce the three-phase power cable and grounding conductor through the power service hole into the electrical enclosure.
- 4 Connect the three-phase power cable to the terminals R1, S1, and T1 of the terminal block.
- 5 Connect the grounding conductor to the terminal E of the terminal block.
- 6 Close the electrical enclosure, and tighten the screws.



Checking wiring connections

When the wiring connections of the machine are completed, check them as described below.

- 1 Turn on the shop circuit breaker.
- 2 Turn the handle of the machine circuit breaker to ON.
- 3 Turn the POWER ON/OFF keyswitch to "I" (ON) to turn on the power of the machine.
- 4 Press the MAIN MOTOR ON button to start the main motor. Then immediately press the MAIN MOTOR OFF button.



5 Check the rotational direction of the accessory fan to see that the main motor runs in the direction indicated by the arrow.

If the main motor runs in the direction indicated by the arrow, this means that the wiring connections are correctly made and completes the checking procedure.

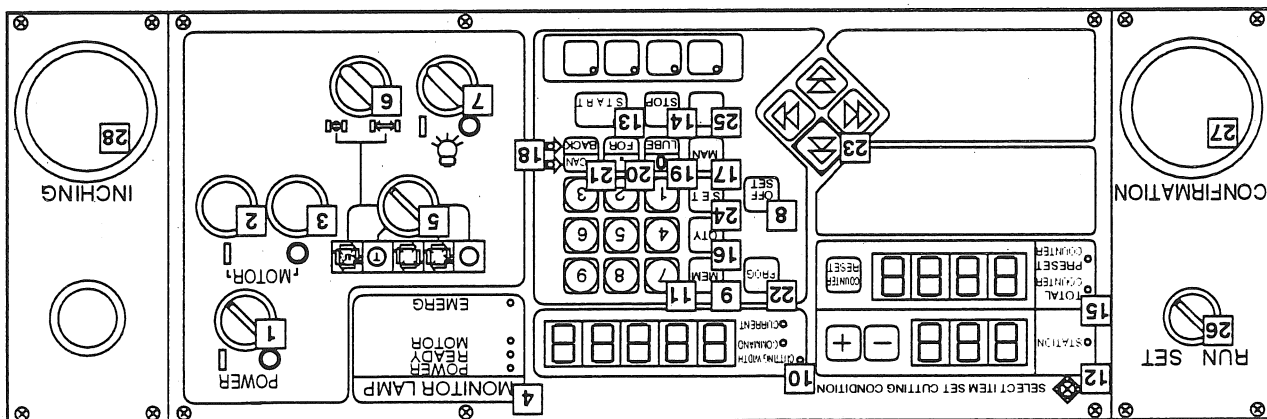
If not, check that the main motor has stopped, and interchange the wiring connections as described below.

- (1) Turn the POWER ON/OFF keyswitch to "O" (OFF) to turn off the power of the machine.
- (2) Turn the handle of the machine circuit breaker to OFF.
- (3) Loosen the two screws, turn the handle of the machine circuit breaker to "Reset Open," and open the electrical enclosure.
- (4) Interchange two of the three power cable conductors connected to the terminals R1, S1, and T1 of the terminal block.
- 6 Close the electrical enclosure, and tighten the screws.
- 7 Repeat steps 1 to 4 above to recheck the rotational direction of the main motor.

Control box.....III-2
Other controls.....III-10

Part III
Controls

CONTROL BOX



[1] POWER ON/OFF keyswitch

Used to turn on and off the power of the machine. Turn the keyswitch to "I" (ON) to turn on the power of the machine and the POWER lamp to "O" (OFF) to turn off the power of the machine and the POWER lamp (yellow). Turn the keyswitch to "O" (OFF) to turn off the power of the machine and the POWER lamp. The key can be inserted and removed only when the keyswitch is turned to "O" (OFF).

WARNING

● The chief machine operator must keep the key of the POWER ON/OFF keyswitch in his custody.

[2] MAIN MOTOR ON button

Pressed to blink or light the MOTOR lamp and to start the main motor as follows:

- a) M-2060, -2560, -3045, -3060, -4045 and -4065
The MOTOR lamp (green) blinks when the main motor is started with the star connection and stays on when the main motor is switched to the delta connection.
- b) M-1245, -1260, -2045, and -2545
The MOTOR lamp (green) turns on as soon as the main motor starts.

[3] MAIN MOTOR OFF button

Pressed to stop the main motor and to turn off the MOTOR lamp (the green).


● In the SINGLE mode, the antirepeat function actuates to stop the ram after a single cycle, irrespective of how the foot switch is operated (pressed and then released immediately, or held down). The foot switch is disabled even if pressed again while the ram is operating. To lower the ram again, release the foot switch and press it again after the ram has stopped at the top dead center.

NOTE

The ram lowers each time the foot switch is pressed. The ram operates for one cycle and stops at the top dead center.

-  (SINGLE) position

The ram does not move when the foot switch is pressed.

-  (OFF) position

The ram is started according to the mode to which the MODE keyswitch is set.

[5] MODE keyswitch

Turns on to indicate that the emergency stop button is pressed and that the machine is in the emergency stop condition.

- **EMERG lamp (red)**

● The machine cannot be operated while the MOTOR lamp (green) is blinking.

NOTE

Blinks to indicate that the main motor is started with the star connection and stays on to indicate that the main motor is switched to the delta connection (M-2060, -2560, -3045, -3060, -4045 and -4065). Turns on to indicate that the main motor is line started (M-1245, -1260, -2045, and -2545).

- **MOTOR lamp (green)**

Comes on to indicate that the machine has completed the preparations for cutting (such as the main motor started, operating mode selected, and backgauge positioned).

- **READY lamp (green)**

Comes on to indicate that the POWER ON/OFF keyswitch is turned to "I" (ON).

- **POWER lamp (yellow)**


[4] MONITOR lamps

● The worksheet cannot be automatically sheared using the automatic shearing limit switches unless the machine is set to operate in the AUTO mode.

NOTE

Used to select the limit switches to suit the cutting width of the worksheet for automatic shearing. Turned to SHORT to enable the right and center limit switches and to LONG to enable the left and center limit switches.
The inverted triangle marks are affixed at the front of the machine to indicate the SHORT and LONG limit switch positions.

[6] CONTACT switch

	<p>● In the AUTO mode, the ram starts as soon as the worksheet is pushed against the automatic shearing limit switches. When the MODE keyswitch is set at AUTO, work with the machine while ensuring the safety of other operators.</p>
---	---

The ram operates in the same way as in the SINGLE mode when the worksheet is pushed against the automatic shearing limit switches. Refer to [6] CONTACT switch below.

●  (AUTO) position

● Do not cut any worksheet when the machine is in the INCHING mode. Otherwise the machine may be damaged.

NOTICE

The ram operates as long as the INCHING and CONFIRMATION buttons are both held down and stops as soon as either button is released. Use this mode to adjust the blade clearance.

●  (INCHING) position

The ram continuously operates as long as the foot switch is held down and stops at the top dead center when the foot switch is released.

●  (CONTINUOUS) position

Comes on to indicate that the current position of the backgauge is shown on the CUTTING WIDTH display.

• **CURRENT LED**

Comes on to indicate that the target position of the backgauge (cutting width) is shown in the CUTTING WIDTH display.

• **COMMAND LED**

Blinks to indicate that the cutting width can be entered on the CUTTING WIDTH display.

• **CUTTING WIDTH LED**

Used to show the current position of the backgauge, target position of the backgauge (cutting width), and alarm number.

[10] CUTTING WIDTH display

Pressed to turn on the built-in LED (red), to invoke the memory mode, and to allow the entry of the cutting width. When the entry of the cutting width is completed, press the MEM key or START key to turn off the built-in LED (red), to store the cutting width in memory, and to clear the memory mode. To call the cutting width entered, press the MEM key to turn on the built-in LED (red) and to invoke the memory mode.

[9] MEM key

Pressed together with the SET key to turn on the built-in LED (red) and to correct the current position of the backgauge shown on the CUTTING WIDTH display. Used to correct the error between the cutting width shown on the CUTTING WIDTH display and the actual cutting width of the worksheet.

[8] OFF SET key

Used to turn on and off the beam light to be aligned with the line scribed on the worksheet. Turn the switch to "I" (ON) to turn on the beam light and to "O" (OFF) to turn off the beam light. When the alignment of the beam light with the line scribed on the worksheet is completed, turn the switch to "O" (OFF) to turn off the beam light.

[7] LIGHT BEAM switch

[11] Numeric keys

Used to enter various numerical data.

[12] STATION-STEP display

Used to show the station number and step number. In the memory mode, press the "+" key once to increase the step number by 1, and press the "-" key once to decrease the step number by 1. Blink the STATION LED to enter the station number.

[13] START key

In the memory mode, pressed to clear the memory mode and to move the backgauge toward the target position shown on the CUTTING WIDTH display. The built-in LED (green) turns on at this time and goes out when the positioning of the backgauge is completed.

[14] STOP key

While the backgauge is moving, pressed to stop the backgauge and to turn off the built-in LED (green) of the START key.

[15] COUNTER display

When the station number 0 is shown on the STATION-STEP display (as-required entry and call operation), the TOTAL COUNTER LED turns on, and the number of cuts made is shown on the COUNTER display. Press the COUNTER RESET key to show "0" on the COUNTER display.

When the station number is one of 1 to 9, the PRESET COUNTER LED (red) comes on, and the COUNTER display functions as a subtracting preset counter. Press the COUNTER RESET key once to show the programmed number of cuts to be made on the COUNTER display.

[16] QTY key

Used to turn on and off the function of counting the number of cuts already made.

Usually have the built-in LED of the key turned on to ready the COUNTER display for counting the number of cuts already made. In this condition, press the QTY key once to turn off the built-in LED and to disable the COUNTER display. To enable the COUNTER display again, press the QTY key to turn on the built-in LED.

[17] MAN key
Held down to turn on the lower key function selection LED (red). In this condition, hold down the /FOR key or CAN/BACK key to move the backgauge forward or backward, and hold down the 0/LUBE key to start the optional automatic grease pump.

[18] Key function selection LEDs
Used to indicate which of the upper and lower functions of the 0/LUBE key, /FOR key, and CAN/BACK key is enabled.
The upper key function selection LED (green) comes on to indicate that the "0", ":", and "CAN" functions are enabled. The lower key function selection key (red) comes on to indicate that "LUBE", "FOR", and "BACK" functions are enabled. Usually, the upper key function selection LED is turned on.

[19] 0/LUBE key
Functions as the "0" numeric key when the upper key function selection LED is turned on.
When the machine is equipped with the optional automatic grease lubrication system, press the 0/LUBE key together with the MAN key to start the optional automatic grease pump.

[20] /FOR key
Functions as the ":" (decimal point) numeric key when the upper key function selection LED is turned on. Hold down the /FOR key together with the MAN key to move the backgauge forward.

[21] CAN/BACK key
Functions as the cancel key when the upper key function selection LED is turned on. Hold down the CAN/BACK key together with the MAN key to move the backgauge backward.

[22] PROG key
When either of the station numbers 1 to 9 is selected in the SINGLE mode, pressed to turn on the built-in LED (green) and to start the machine as programmed.

[23] CURSOR keys
 Used to select the display on which to set data in the memory mode. Press one of the left, right, up, and down cursor keys to turn off the currently blinking LED, to start another LED blinking, and to enable data to be set or entered on the display whose LED is blinking.

[24] SET key
 Used to correct the current position shown on the CUTTING WIDTH display, for example.

[25] Spare key
 Pressed together with the STOP key and the SET key to show on the STEP display the total number of cuts made since the power of the machine was turned on for the first time. (This is called the integrating quantity counter function.)
 Use this value as a measure for the time to change the upper and lower blades. Press the three keys again to return the CUTTING WIDTH display and the STATION-STEP display to the original condition.

NOTE

- The total number of cuts already made cannot be reset.
- Each time the spare key is pressed together with the down cursor key, the input unit of the CUTTING WIDTH display can be changed from the millimeter to the inch or vice versa.

--	--	--	--

Position of decimal point when input unit is millimeter

Position of decimal point when input unit is inch

Push TOGETHER WITH Δ TO TOGGLE INCH / METRIC

[26] RUN/SET keyswitch

Turned to RUN to operate the ram in the selected mode with the foot switch when the MODE keyswitch is set to either of SINGLE, CONTINUOUS and AUTO and when the machine is equipped with the finger protector.
 Turned to SET to operate the ram in the INCHING mode with the CONFIRMATION button and the INCHING button when the MODE keyswitch is set at INCHING.

NOTE

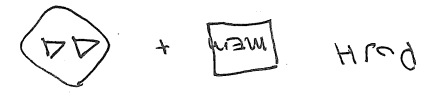
- If the machine is not equipped with the finger protector, the ram cannot be started with the foot switch when the RUN/SET keyswitch is set at RUN.
- When the RUN/SET keyswitch is set at SET, the ram can operate only in the INCHING mode. Turn the keyswitch to RUN when cutting the worksheet.

[27] CONFIRMATION button
Pressed together with the INCHING button to operate the ram in the INCHING mode when the RUN/SET keyswitch is set at SET and when the MODE keyswitch is set at INCHING.

[28] INCHING button
Pressed together with the CONFIRMATION button to operate the ram in the INCHING mode when the RUN/SET keyswitch is set at SET and when the MODE keyswitch is set at INCHING.

NOTE: STATION 0-0 must be selected in order for INCHING mode to work. THE READY LIGHT will come on when at station 0-0.

TO SELECT STATION 0-0 :



STATION LIGHT WILL BLINK



PUSH

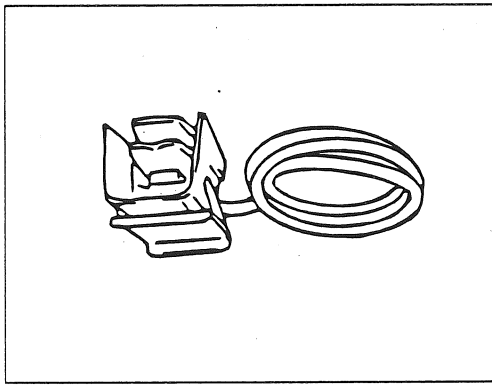


PUSH

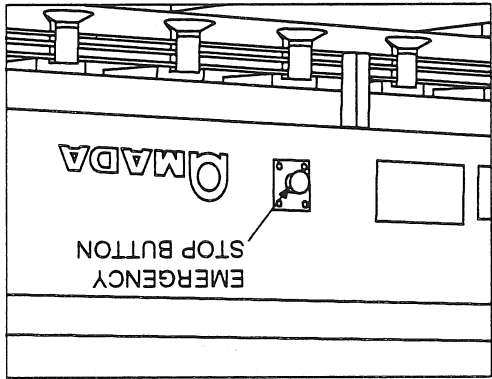
PUSH FTJ TOGETHER WITH CONFIRMATION AND INCHING & PALM BUTTONS.

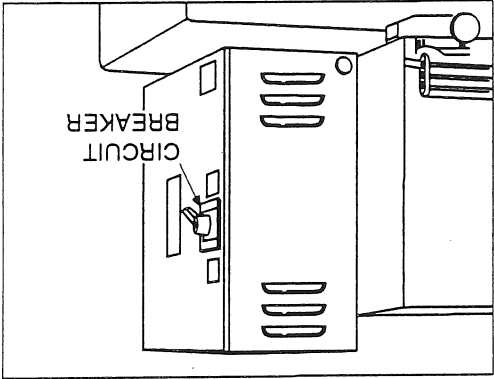
OTHER CONTROLS

Foot switch
 Pressed to operate the ram
 in the mode (excluding
 INCHING) selected with the
 MODE keyswitch.



Emergency stop button
 Pressed to stop the ram in
 the current position
 immediately as well as to
 stop the main motor and the
 backgauge motor and to
 bring the machine to the
 emergency stop condition.
 The emergency stop button
 is locked when pressed. Turn
 it clockwise to unlock it. To
 resume the operation of the
 machine, press the MAIN
 MOTOR ON button to start
 the main motor.





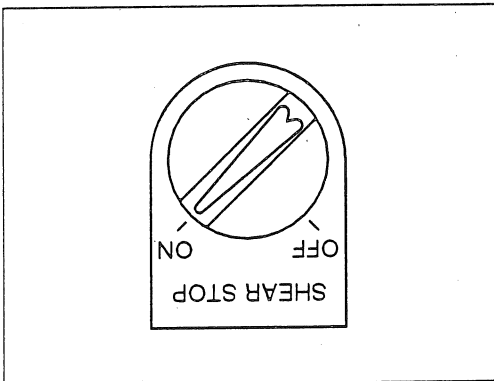
Turn the handle to ON to turn on the power of the machine and to OFF to turn off the power of the machine.

Circuit breaker

WARNING

- Be sure to turn the SHEAR STOP switch to ON before removing the cut worksheet or scrap that has dropped into the machine. Never reach through the frame gap to remove the cut worksheet or scrap.

- The ram does not lower when the foot switch is pressed.
- The backgauge does not operate.
- The optional pneumatic sheet support lowers if it is raised.



SHEAR STOP switch (at rear of electrical enclosure)

Provided to activate the safety functions of the machine and used to work at the rear of the machine. Turn the switch to ON to activate the following safety functions:

IV-2 Turning on and off power.....

IV-2 Turning on power.....

IV-2 Turning off power.....

IV-3 Setting cutting position without using backgauge.....

IV-3 Setting cutting position using beam light.....

IV-3 Setting cutting position using front stopper.....

IV-4 Operation.....

IV-4 Operation with cutting width entered anew or called from memory as required.....

IV-4 Entering cutting width and automatically positioning backgauge.....

IV-4 Calling cutting width and automatically positioning backgauge.....

IV-5 backgauge.....

IV-6 Cutting.....

IV-8 Program operation.....

IV-8 Entering program.....

IV-10 Cutting (program operation).....

IV-11 Manually operating backgauge.....

IV-12 Alarms.....

Part IV

Operation

TURNING ON AND OFF POWER

Turning on power

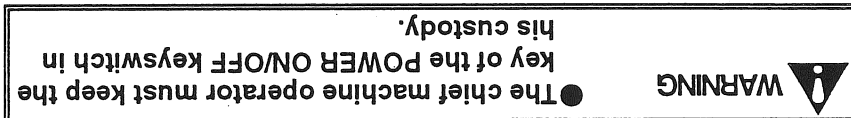
After daily maintenance and inspection, start the machine as described below. (Refer to "Every day" on page V-5.)

- 1 Turn on the shop circuit breaker.
- 2 Turn the handle of the machine circuit breaker to ON.
- 3 Turn the POWER ON/OFF keyswitch to "I" (ON) to turn on the power of the machine and the POWER lamp (yellow).
For a few seconds, "-" will appear on the CUTTING WIDTH display. This is not an error, but indicates that the internal computer is checking itself.
- 4 Press the MAIN MOTOR ON button to start the main motor and to turn on the MOTOR lamp (the green).
 - a) M-2060, -2560, -3045, -3060, -4045, and -4065
The MOTOR lamp (green) blinks when the main motor is started with the star connection and stays on when the main motor is switched to the delta connection.
 - b) M-1245, -1260, -2045, and -2545
The MOTOR lamp (green) comes on as soon as the main motor starts.

Turning off power

When the operation of the machine is completed, stop the machine as described below.

- 1 Press the MAIN MOTOR OFF button to stop the main motor and to turn off the MOTOR lamp (green).
- 2 Turn the POWER ON/OFF keyswitch to "O" (OFF) to turn off the power of the machine and the POWER lamp (yellow).
- 3 Turn the handle of the machine circuit breaker to OFF.
- 4 Turn off the shop circuit breaker.



SETTING CUTTING POSITION WITHOUT USING BACKGAUGE

Setting cutting position using beam light

Set the cutting position with the beam light as described below.

NOTE

● The life of the bulb is shortened if the beam light is kept on. Turn off the beam light when not in use.

- 1 Turn the LIGHT BEAM switch to "I" (ON) to turn on the beam light.
- 2 Align the line scribed on the worksheet with the boundary line of the beam light.

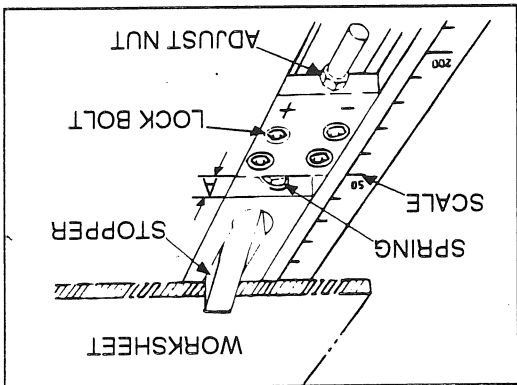
Setting cutting position using front stopper

Set the cutting position with the front stopper as described below.

NOTICE

● When cutting a large worksheet, take care so that it does not strike against the backgauge.

- 1 Loosen the four stopper lock bolts.
- 2 Slide the stopper to set the stopper contact surface at the cutting width.
- 3 Tighten the lock bolts to fix the stopper in place.



- 4 Finely adjust the dimension A (standard setting of 17 mm) to suit the thickness of the worksheet to be cut. Make this fine adjustment by turning the adjust nut with an offset wrench.

OPERATION

The machine can cut worksheets in two operating modes. In one mode, each cutting width is entered anew or called from memory, and the worksheet is cut to the preset width. This is called "operation with cutting width entered anew or called from memory as required." In the other, the worksheet is cut as programmed. This is called "program operation."

Operation with cutting width entered anew or called from memory as required

One type of cutting width is entered (or called from memory), the backgauge is automatically positioned to the cutting width, and the worksheet is cut to the preset width.

ENTERING CUTTING WIDTH AND AUTOMATICALLY POSITIONING BACKGAUGE

To automatically move the backgauge to the cutting width, enter the cutting width as described below.

- 1 Press the MEM key. The built-in LED (red) of the key will come on, and the memory mode will be invoked. Also, the CUTTING WIDTH LED (red) of the CUTTING WIDTH display will blink, the COMMAND LED (green) will come on, and the machine will be ready for entry of the cutting width.
- 2 Press the left cursor key to blink the STATION LED (red) of the STATION-STEP display.
- 3 Enter "0" with the 0/LUBE key.
- 4 Press the "+", "-", or "." key of the STATION-STEP display to select the step where the cutting width is to be entered.
- 5 Press the right cursor key to blink the CUTTING WIDTH LED of the CUTTING WIDTH display.
- 6 Enter the cutting width with the numeric keys.

- 1 Check that the built-in LED (red) of the MEM key is turned on to indicate that the memory mode is invoked. If the LED is turned off, press the MEM key to turn it on.
- 2 Check that the cutting width is shown on the CUTTING WIDTH display. If not, press the "+" or "-" key of the STATION-STEP display to select and show the step number where the necessary cutting width is stored in memory.
- 3 Press the START key to move the backgauge to the cutting width shown on the CUTTING WIDTH display.

Automatically position the backgauge at the cutting width already stored in memory as described below.

CALLING CUTTING WIDTH AND AUTOMATICALLY POSITIONING BACKGAUGE

● When the MEM key is pressed to turn off the built-in LED after the entry of the cutting width, the backgauge cannot be moved by pressing the START key. To move the backgauge, press the MEM key again to turn on the built-in LED. Then press the START key to start the backgauge.

NOTE


- 7 Enter the cutting width at two or more steps as described below.
 - (1) Press the "+" or "-" key of the STATION-STEP display to change the step number. The step number increases by 1 each time the "+" key is pressed and decreases by 1 each time the "-" key is pressed.
 - (2) Enter the cutting width with the numeric keys.

The cutting width can be entered without changing the step number. The cutting width entered last at a step number is valid at the step number.
- 8 Start the backgauge by referring to "Calling cutting width and automatically positioning backgauge" below.

Press the MEM key to store the entered cutting width in memory without starting the backgauge. The built-in LED of the MEM key will go out, the memory mode will be cleared, and the cutting width entered will be stored in memory.

CUTTING

When the READY lamp is turned on, the worksheet can be cut as described below.



WARNING 

- Before starting the cutting operation, check that there are no workers and obstacles around the machine. Pay particular attention to the rear of the machine. Never leave tools and the like on the table and ram.
- Be sure to turn the SHEAR STOP switch to ON before removing the blanks or scrap that have dropped into the machine. Never reach through the frame gap to remove such blanks or scrap.

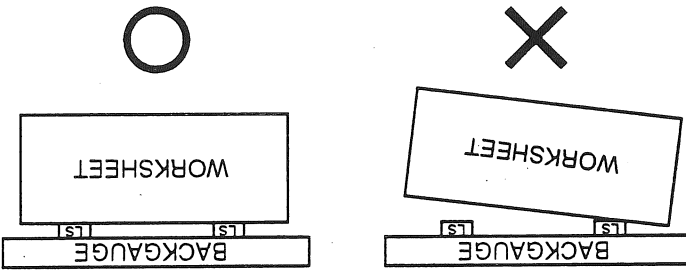
NOTE

● To count the number of cuts already made, press the QTY key to turn on the built-in LED of the key. To reset the count to "0", press the COUNTER RESET key of the COUNTER display with the built-in LED of the QTY key turned on.

Cutting worksheet once




- 1 Turn the RUN/SET keyswitch to RUN.
- 2 Turn the MODE keyswitch to  (SINGLE).
- 3 Set the worksheet at the cutting position.
- 4 Press the foot switch to cut the worksheet.
- 5 When the cut is completed, turn the MODE keyswitch to  (OFF).

LS : LIMIT SWITCH



● Push the worksheet against the two limit switches enabled. If not, the ram does not lower.


NOTE

- 1 Turn the RUN/SET keyswitch to RUN.
- 2 Turn the MODE keyswitch to  (AUTO).
- 3 Turn the CONTACT switch to  (LONG) or  (SHORT) to suit the length of the worksheet.
- 4 Push the worksheet against the two limit switches enabled. The ram will operate (lower and rise) one cycle to cut the worksheet.


● The worksheet cannot be cut by this method unless it is longer than the distance between the two limit switches enabled.

NOTE

Cutting with automatic shearing limit switches

- 5 When all cuts are completed, turn the MODE keyswitch to  (OFF).
- Depending on the cutting width, the worksheet may be cut before it is pushed against the backgauge.

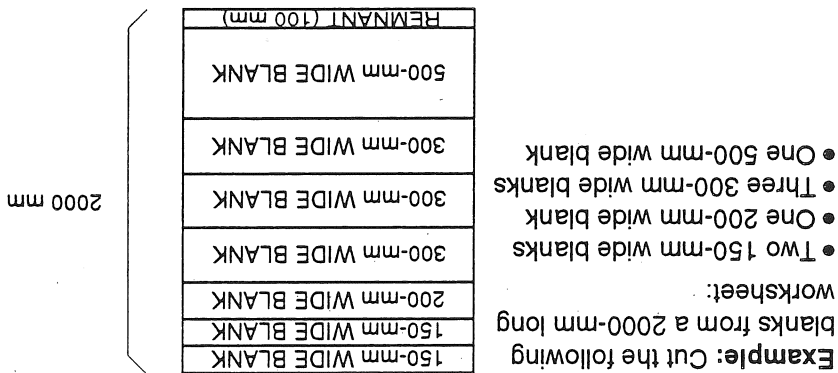
NOTE

- 1 Turn the RUN/SET keyswitch to RUN.
- 2 Turn the MODE keyswitch to  (CONTINUOUS).
- 3 Set the worksheet at the cutting position.
- 4 Press the foot switch to cut the worksheet. Push the worksheet against the backgauge each time a cut is made.

Continuously cutting worksheet to same width

- 1 Press the MEM key to turn on the built-in LED (red) and to invoke the memory mode.
- 2 Press the left cursor key to blink the STATION LED (red) of the STATION-STEP display.
- 3 Using the numeric keys, enter the station number where the program is to be entered ("1" in this example). When the station number is entered, the step number 0 is shown.
- 4 Press the right cursor key to blink the CUTTING WIDTH LED (red) of the CUTTING WIDTH display.
- 5 Enter the cutting width with the numeric keys ("150" in this example).
- 6 Press the left and down cursor keys once each to blink the PRESET COUNTER LED (red) of the COUNTER display.
- 7 Enter the number of cuts to be made with the numeric keys ("2" in this example).
- 8 Press the right cursor key to blink the CUTTING WIDTH LED (red) of the CUTTING WIDTH display.
- 9 Press the "+" key of the STATION-STEP display to change the step number from 0 to 1.

ENTERING PROGRAM



With program operation, the backgauge automatically cycles through steps according to a pre-entered program (composed of cutting widths and the number of cuts to be made), and the operator pushes the worksheet against the backgauge and press the foot switch each time a cut is made.

An example of program operation is given below. The entry and operation methods are also described.

Program operation

10 Repeat steps 5 to 9 above to enter each cutting width and the number of cuts to be made at the width. In this example, enter the data as shown below.

STATION-STEP display	CUTTING WIDTH display	COUNTER display	Sta. No.	Step No.	Cutting width	Number of cuts
1	150.0	2	1	0	150.0	2
1	200.0	1	1	1	200.0	1
1	300.0	3	1	2	300.0	3
1	500.0	1	1	3	500.0	1

11 Repeat steps 5 to 8 above to enter the data to mean the final step ("0" for both of the cutting width and the number of cuts). In this example, enter the data as shown below.

STATION-STEP display	CUTTING WIDTH display	COUNTER display	Sta. No.	Step No.	Cutting width	Number of cuts
1	0.0	0	1	4	0.0	0


NOTE


● Unless the data to denote the final step are entered, the backgauge cycles to the step where such data are entered or to the last step 9.

12 Press the MEM Key to turn off the built-in LED (red) and to clear the memory mode.

NOTE

● One station consists of 10 steps or steps 0 to 9 and can store a maximum of 10 cutting widths.

- 1 Press the MEM key to turn on the built-in LED (red) and to invoke the memory mode.
 - 2 Press the left cursor key to blink the STATION LED (red) of the STATION-STEP display.
 - 3 Using the numeric keys, enter the number of the station where the program to be called is stored ("1" in this example). When the station number is entered, the step number 0 is shown on the STATION-STEP display.
 - 4 Press the START key to move the backgauge to the cutting width set at the station number and step number shown on the STATION-STEP display and to automatically position the backgauge at the cutting width.
 - 5 Turn the RUN/SET keyswitch to RUN.
 - 6 Turn the MODE keyswitch to  (SINGLE).
 - 7 Press the PROG key to turn on the built-in LED (green) and to invoke the program operation mode.
 - 8 Press the QTY key to turn on the built-in LED.
 - 9 Push the worksheet against the backgauge, and press the foot switch. The ram will lower and cut the worksheet.
- When two blanks are cut, the step number is automatically changed to "1", and the backgauge automatically moves to "200.0" and positions itself there. The machine then goes through the following steps:

WARNING 

- Before starting the cutting operation, check that there are no workers and obstacles around the machine. Pay particular attention to the rear of the machine. Never leave tools and the like on the table and ram.
- Be sure to turn the SHEAR STOP switch to ON before removing the blanks or scrap that have dropped into the machine. Never reach through the frame gap to remove such blanks or scrap.

Manually operating backgauge

Move the backgauge in the desired direction with the MAN key as described below.

- Forward : Press the /FOR key together with the MAN key.
- Backward : Press the CAN/BACK key together with the MAN key.

● When the machine returns to the first step number in the program operation mode, it can cut the same series of blanks. When the preset number of blanks is cut, stop the machine.


● A maximum of 9 programs can be stored at stations 1 to 9 as described above, and the machine can be operated according to the programs.

NOTE

- One blank cut → Step No. changed to 2 → Backgauge positioned at "300.0"
- Three blanks cut → Step No. changed to 3 → Backgauge positioned at "500.0"
- One blank cut → Step No. changed to 0 → Backgauge positioned at "150.0"

Alarm No.	Symptom or description	Remedy
Er00	Main motor cannot be stopped.	Contact AMADA service engineer.
Er01	Main motor cannot be started.	Contact AMADA service engineer.
Er02	Ram cannot be stopped.	Contact AMADA service engineer.
Er03	Ram cannot be started.	Contact AMADA service engineer.
Er04	Ram has overrun.	Contact AMADA service engineer.
Er05	Ram cannot be started	Contact AMADA service engineer.
Er06	Ram cannot be started when foot switch is pressed or cannot be stopped when foot switch is released.	Contact AMADA service engineer.
Er13	Backgauge has overtraveled forward limit.	Press CAN/BACK key together with MAN key to move backgauge backward.
Er14	Backgauge has overtraveled backward limit.	Press /FOR key together with MAN key to move backgauge forward.
Er20	Cutting width entered is greater than movement range	Press CAN/BACK key, and enter cutting width again.
Er21	Cutting width entered is smaller than movement range	Press CAN/BACK key, and enter cutting width again.
Er30	Power has been turned off while backgauge is moving.	Press CAN/BACK key, and set current position again.
Er31	Inverter or encoder is faulty.	Press inverter reset button in electrical enclosure. If alarm cannot be still cleared, encoder is faulty. Contact AMADA service engineer.
P2Err	Backgauge deceleration position data is invalid.	Contact AMADA service engineer.
P3Err	FCU data backup is faulty.	Contact AMADA service engineer.
H1Err	Internal memory is faulty.	Contact AMADA service engineer.
H2Err	DPRAM memory is faulty.	Contact AMADA service engineer.
H3Err	CPU board is faulty.	Contact AMADA service engineer.

The alarm numbers and their meanings are shown in the table below. Clear each alarm as described in the "Remedy" column of the table.

WARNING 

- Before maintaining, inspecting, or adjusting the machine, stop the air supply, turn the POWER ON/OFF keyswitch to "O" (OFF), remove the key from the keyswitch, and keep the key in your custody.
- Before opening the electrical enclosure, be sure to turn off the shop circuit breaker. Never touch any part in the electrical enclosure. Otherwise you may suffer an electric shock.
- Post a sign to notify other workers that you are performing maintenance, inspection, or adjustment on the machine.

Periodic maintenance V-2

Every day V-2

Every week and every month V-3

Every 300 hours V-5

Changing hydraulic oil of holdown system V-5

Venting air from hydraulic circuit of holdown system V-6

Adjustment V-7

Setting current position of backgauge V-7

Changing blades V-7

Removing blades V-8

Installing blades V-11

Adjusting lower blade in vertical direction V-13

Adjusting blade clearance V-14

Adjusting beam light V-16

Changing bulb V-16

Adjusting position of beam light V-16

Adjusting backgauge (cutting width) V-17

Inspection before adjustment V-17

Cutting test sheet V-18

Adjusting straightness of backgauge V-19

Adjusting parallelism of backgauge V-21

Changing backup battery V-23

Part V

Maintenance

PERIODIC MAINTENANCE

Every day

Before starting the day's work, be sure to check the following conditions.

- Check that the lubricating oil tank is full one-third or more, and push the pump lever once.
When the lubricating oil tank is low on oil, add one of the following recommended oils through the filler plug.

MANUFACTURER	
AMADA	Esso
Mobil	Vactra Oil 68
A-75	Terresso 68
OIL	

NOTICE

- The lack of the lubricating oil causes the seizure of the bearings.
Always check for the lubricating oil quantity and lubricating condition.
Add oil of the same type as that in the tank, and take care that foreign matter and air are not introduced together with the oil into the tank.

- Check that the hydraulic oil level of the holddown system is above the middle of the oil gauge. When the oil level is lower, add oil through the filler plug. For the recommended oil, refer to "Every 300 hours" on page V-5.

- Check that there are no projections at the contact surface of the backgauge. If there are, smooth the contact surface of the backgauge with oilstone.


- Check that the data backup battery is not exhausted. When the battery runs down, the right-hand point of the STATION-STEP display starts to blink. For the method of changing the battery, refer to "Changing backup battery" on page V-23.

Every week and every month



Electrical

- Check that the POWER ON/OFF keyswitch normally operates.
- Check that the MODE keyswitch normally operates to OFF, SINGLE, CONTINUOUS, INCHING, and AUTO. Especially, check that the antirepeat function normally operates in the SINGLE and AUTO modes. (Refer to "Checking antirepeat function" below.)
- Check that the COUNTER display normally operates.
- Check that the beam light normally operates.
- Check that the backgauge is properly adjusted.
- Check that the foot switch normally operates.
- Check that the main motor stops when the emergency stop button is pressed.

Checking antirepeat function

WARNING 

● If the ram lowers again during the check, the antirepeat function may be faulty. Stop to use the machine, turn off the power of the machine, and contact the AMADA service engineer.

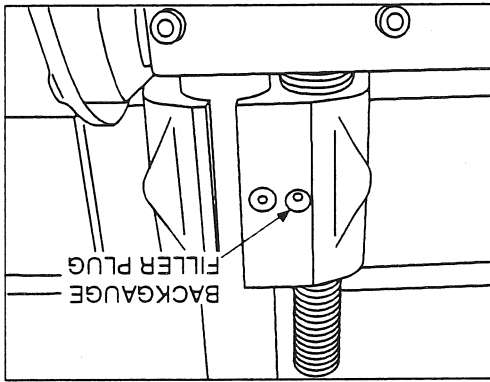
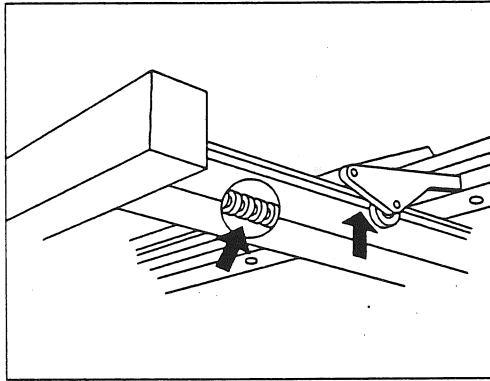
- 1 Turn the POWER ON/OFF keyswitch to "I" (ON).
- 2 Turn the RUN/SET keyswitch to RUN.
- 3 Press the MAIN MOTOR ON button to start the main motor.
- 4 Turn the MODE keyswitch to  (SINGLE).
- 5 Hold down the foot switch.
- 6 Check that the ram lowers from the top dead center to the lower limit, rises from the lower limit to the top dead center, and does not lower from the top dead center for another cycle.
- 7 Release the foot switch.
- 8 Turn the MODE keyswitch to  (AUTO).
- 9 Repeat steps 5 to 7 above.

Hydraulic

- Check that the holddown cylinder normally operates.
- Check that there are no oil leaks at piping connections.

Mechanical

- Check that the following parts are properly cleaned and lubricated:
 - Backgauge guide plates
 - Backgauge feed screws
 - Clearance drive screws
- Check that there are no obstacles and cutting chips around the foot switch.
- Check that there are no obstacles below the holddowns and between the upper and lower blades.
- Check that the bolts and nuts are not loosened.



- Check the following parts for abnormal noise:
 - Flywheel during rotation (when main motor is started)
 - Guide roller during rotation (when ram is operating)
 - Holddowns during operation
- Check the following parts for abnormal vibration:
 - Ram during operation
 - Backgauge during movement
- Check other necessary parts.

Every 300 hours

CHANGING HYDRAULIC OIL OF HOLDDOWN SYSTEM

Change all of the hydraulic oil of the holddown system after the first 300 hours of operation and every 2000 hours thereafter, as described below.

- 1 Turn the POWER ON/OFF keyswitch to "O" (OFF) and the handle of the machine circuit breaker to OFF to turn off the power of the machine, and prepare an oil pan under the drain plug.

- 2 Remove the drain plug to discharge all of the hydraulic oil of the holddown system.

- 3 Loosen the bolts, and remove the front cover of the tank.

- 4 Wash the tank with oil.

- 5 Replace the drain plug.

- 6 Replace the front cover of the tank.

NOTICE

- Securely replace the front cover of the tank to prevent oil leakage.

- 7 Add the recommended oil through the filler plug to the middle of the level gauge.

Tank capacity: 10 L (2.7 US gal)

Recommended oil: AMADA A-110


Mobil Hydraulic Oil 48

Esso Terresso 46 (ISO VG46 equivalent)

NOTICE

- When the hydraulic oil is added, air bubbles are formed in the hydraulic oil in the tank. Do not start the pump (main motor) for 1 hour after the oil addition.

- 1 Prepare an oil pan and waste cloth under the air vent plug.
- 2 Loosen the air vent plug with a wrench until the hydraulic oil seeps out slightly.
- 3 Continuously run the machine idle until the hydraulic oil oozing out of the plug becomes transparent. When the hydraulic oil shows no white bubbles, tighten the plug, clean the area around the plug, and stop the machine.
- 4 Check the oil level of the tank. If the oil level appears on the level gauge, the air venting procedure is completed. If the oil level is low, add the hydraulic oil.

WARNING 

● Never stand in front of the air vent plug when operating the air vent plug during the continuous operation of the machine.

When the machine is used for a long period of time, trace amounts of air are introduced through oil seals and other worn parts. This air collects in the hydraulic circuit and produces such adverse effects as insufficient holdown force. It must be vented from the hydraulic circuit. When the hydraulic oil of the holdown system is changed, vent the air accumulated in the hydraulic circuit as described below.

VENTING AIR FROM HYDRAULIC CIRCUIT OF HOLDDOWN SYSTEM

ADJUSTMENT

Setting current position of backgauge

When the cutting width (preset value) shown on the CUTTING WIDTH display is different from the actual cutting width (measured value), correct the present value as described below.

- 1 Press the SET key together with the OFF SET key to turn on the built-in LED (red) of the OFF SET key.
- 2 Enter the measured value with the numeric keys. The input value will appear on the CUTTING WIDTH display.
- 3 Press again the OFF SET key and the SET key at the same time to turn off the built-in LED (red) of the OFF SET key and to show the input value as the current position of the backgauge on the CUTTING WIDTH display.

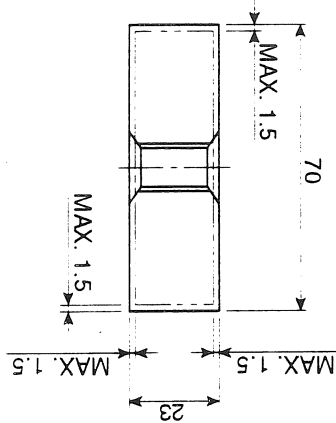
Changing blades

When the machine continues to cut worksheets with blades having worn or chipped edges, it sustains such adverse effects as burred or distorted blanks and excessive cutting force. Change the blades as described below.

WARNING

- Have the blades changed or adjusted by specially trained workers, or ask the AMADA service engineer to change or adjust the blades.
- Be sure to turn off the shop circuit breaker and to remove or install the blades with two or more workers while checking each other's safety.

The upper and lower blades are both four-edged blades. When all of the four edges have been used in rotation, grind them. When a blade has no grinding allowance, change it for a new one.



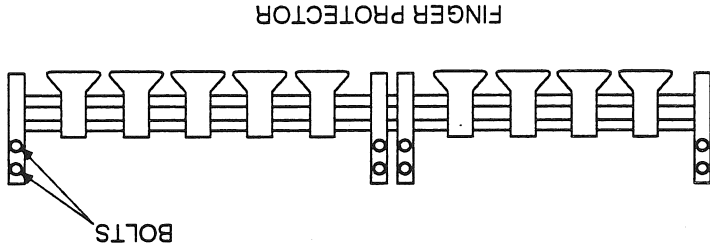
REMOVING BLADES

Remove first the lower blade and then the upper blade as described below.

WARNING

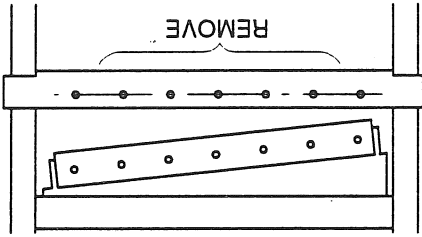
● Be sure to remove the lower blade first. If the upper blade is removed first, you may have the hands pinched between the upper and lower blades in a very dangerous manner.

- 1 Clear away unnecessary things around the machine.
- 2 Automatically position the backgauge, and move the backgauge to the backward limit. (Refer to Part IV, "Operation".)
- 3 Press the MAIN MOTOR OFF button to stop the main motor.
- 4 Turn the POWER ON/OFF keyswitch to "O" (OFF) and the handle of the machine circuit breaker to OFF to turn off the power of the machine.
- 5 Turn off the shop circuit breaker.
- 6 Remove the left and right gap covers, and clean the table surface.
- 7 Remove the finger protector attaching bolts, and remove the finger protector. (The finger protector is divided into several parts on some models.)



- 8 Remove the rear chute.
- 9 Remove the lower blade as described below.

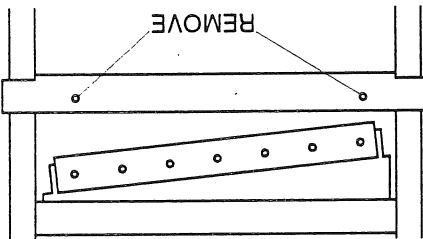
- (1) Remove all lower blade attaching bolts, except the left and right ones. The bolts were inserted from the rear of the lower blade and tightened with the nuts at the front. Loosen the nuts, and pull out the bolts through the rear.



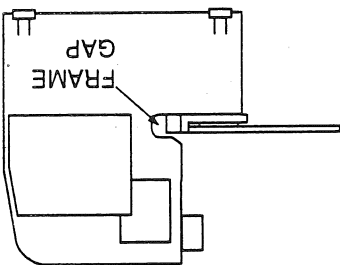
NOTE

●When the nut is turned, the bolt may turn together. Hold the bolt with the accessory flat-blade screwdriver from the rear to facilitate the loosening of the nut.

(2) While another worker holds the lower blade from the rear, remove the left and right lower blade attaching bolts.



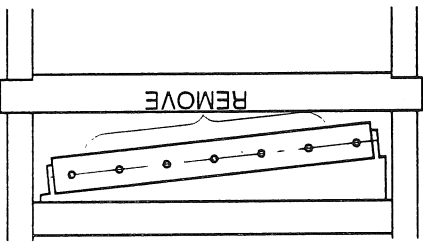
(3) While another worker slides the lower blade sideways against the table into the left or right frame gap, pull out the lower blade through the left or right frame gap.



(4) Gently place the removed lower blade on wood or other soft material, and clean it with waste cloth.
 (5) Mark the edge of the lower blade that has been used last.

10 Remove the upper blade as described below.

(1) Remove all upper blade attaching bolts, except the left and right ones, as follows:



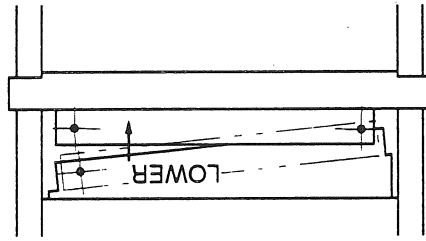
a) M-1245, -1260, -2045, -2060, -2545, and -2560

The bolts was inserted from the front of the upper blade and tightened with the nuts at the rear. Loosen the nuts, and pull out the bolts to the front.

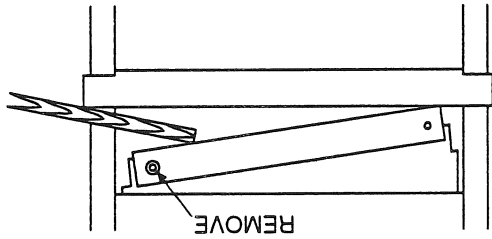
b) M-3045, -3060, -4045, and -4065

The upper blade is tapped and bolted from the rear. Loosen the bolts, and remove the upper blade.

- (9) Mark the edge of the upper blade that has been used last.
- (8) Gently place the removed upper blade onto wood or other soft material while taking care not to damage it. Clean the upper blade with waste cloth.
- (7) While another worker slides the upper blade against the table into the left or right frame gap, pull out the upper blade.

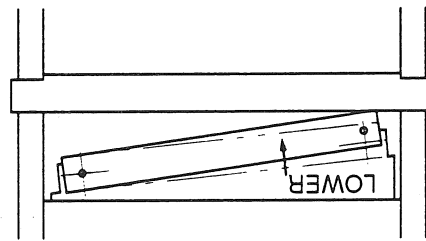


- (6) While another worker holds the upper blade, gradually lower the wooden lever to lower the upper blade onto the lower blade attaching surface while taking care not to damage the lower blade attaching surface.

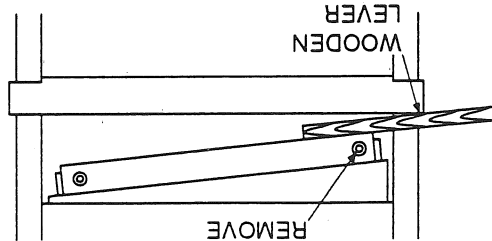


- (5) While the two workers hold the upper blade, remove the remaining bolt.

- (4) While another worker holds the upper blade at the lowered side, insert a wooden lever through the other frame gap and hold the upper blade with the wooden lever.



- (3) While another worker holds the upper blade, gradually lower the wooden lever to lower the upper blade onto the lower blade attaching surface while taking care not to damage the lower blade attaching surface.



- (2) While another worker holds the upper blade with a wooden lever inserted through the left or right frame gap, remove the bolt at the left or right side where the wooden lever is inserted.

INSTALLING BLADES

Install first the upper blade and then the lower blade as described below.

! DANGER

● Be sure to install the upper blade first. If you first install the lower blade, you may have your hands caught between the upper and lower blades in a very dangerous manner when installing the upper blade.

1 Remove dust, oil and other foreign matter as well as burrs from the upper blade installing surface (ram) and lower blade installing surface with waste cloth or oilstone.

2 When installing a new or ground blade, remove the grinding burrs with oilstone.

3 Install the upper blade as described below.

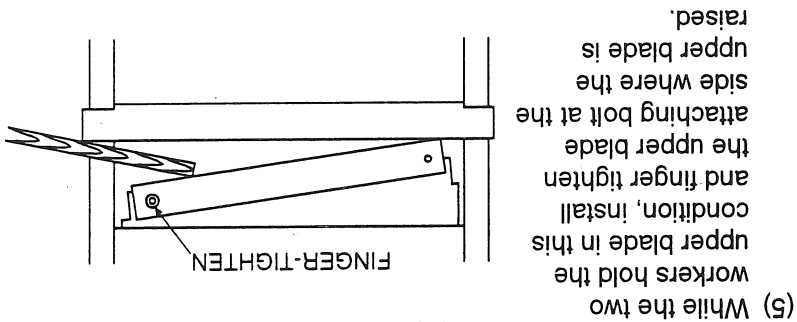
(1) Check that the blade clearance is set at the maximum value.

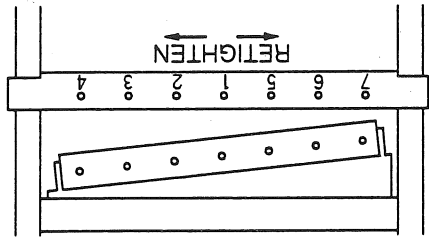
(2) When changing a ground blade for a new one, lower the table with the bolts at the left and right edges of the table.

NOTICE

● Unless the table is lowered, the upper and lower blades engage when the lower blade is installed.

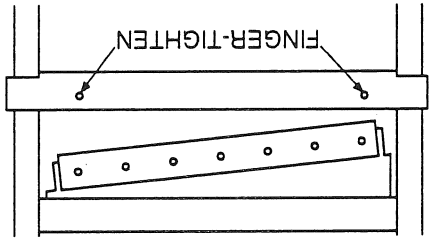
- (3) While paying attention to the orientation of the edge to be used, insert the upper blade through the left or right frame gap and slide it against the lower blade installing surface.
- (4) While one worker holds the upper blade, insert a wooden lever through the left or right frame gap and raise the upper blade with the wooden lever.





(4) Retighten the lower blade attaching bolts sequentially from the center to the left or right.

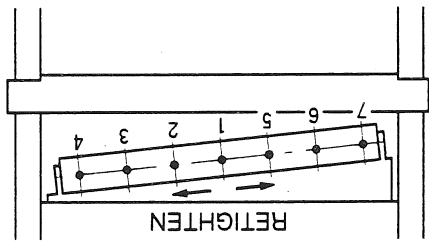
(3) Install and finger tighten all other lower blade attaching bolts.



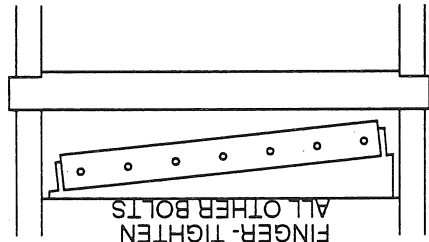
(2) While another worker pushes the lower blade against the lower blade installing surface, install and finger tighten the lower blade attaching bolts at the left and right edges.

(1) While paying attention to the orientation of the edge to be used, insert the lower blade through the left or right frame gap and slide it against the lower blade installing surface.

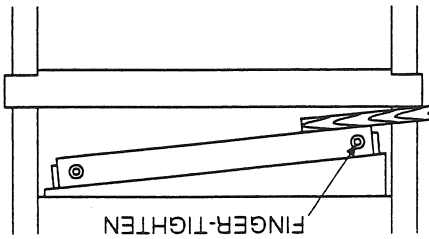
4 Install the lower blade as described below.



(8) Retighten the upper blade attaching bolts sequentially from the center to the left or right.



(7) While the other worker pushes the upper blade against the ram, install and finger tighten all other upper blade attaching bolts.



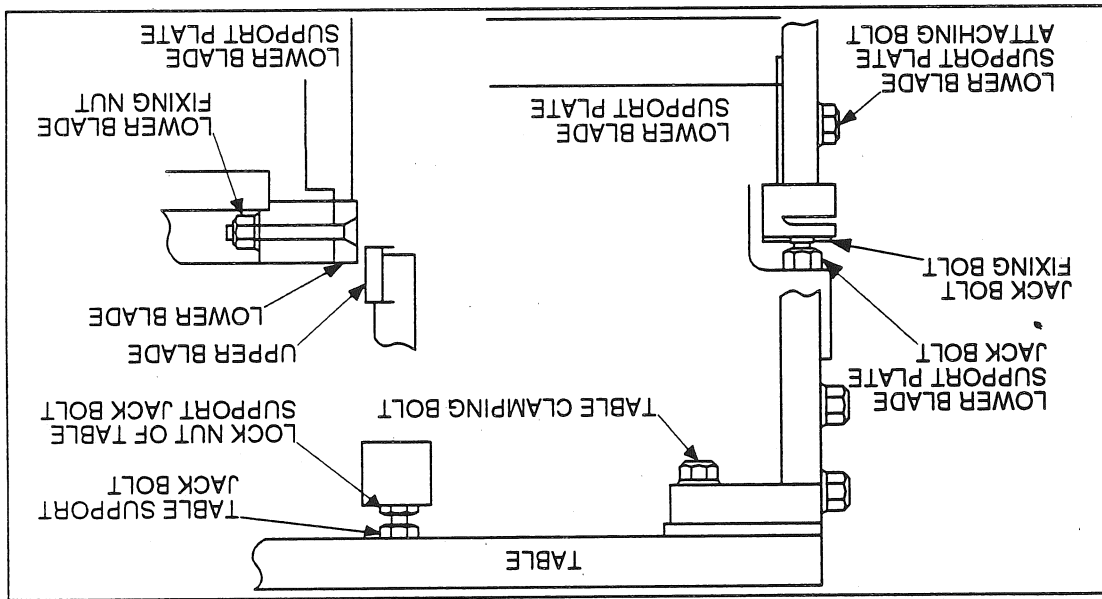
(6) While another worker holds the upper blade with the wooden lever inserted through the other frame gap, install and finger tighten the upper blade attaching bolt at the other side.

ADJUSTING LOWER BLADE IN VERTICAL DIRECTION

When the upper and lower blades are changed, adjust the top surface of the lower blade to the same height as the table surface as described below.

NOTE

● When the machine is equipped with the optional blade clearance control panel, refer to "Blade clearance control panel" in Part VI Options.



1 Slightly loosen each lower blade fixing nut. Loosen the lock nut of each table support jack bolt, and lower the table support jack bolt. Loosen the lower blade support plate attaching bolts at the left and right sides of the machine. Loosen the jack bolt fixing bolts at the left and right sides of the machine.

2 Raise or lower the lower blade support plate jack bolts to make the top surface of the lower blade flush with the table surface. Check that there is no clearance between the bottom surface of the lower blade and the lower blade support plate, using thickness gauges inserted through the left and right frame gaps.

3 When the necessary adjustment is completed, securely tighten each bolt and lock nut.

4 Bring the table support jack bolt into tight contact with the table surface, and tighten the lock nut of table support jack bolt.

5 When the top surface of the lower blade is higher than the table surface in a localized portion, cut a worksheet over such a length that the worksheet fully contacts the holdowns in that portion to push down the lower blade.

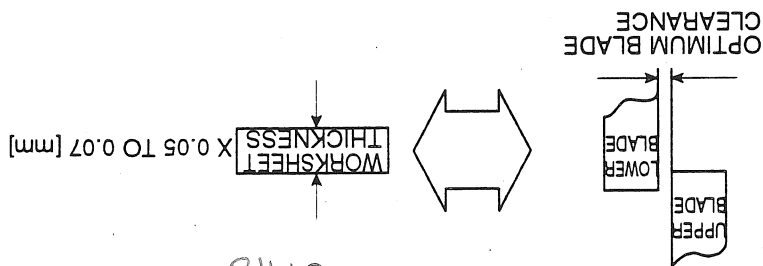
6 After making two to three trial cuts over the length of the lower blade, retighten the lower blade fixing nuts and other bolts and nuts to complete the adjusting procedure.

ADJUSTING BLADE CLEARANCE

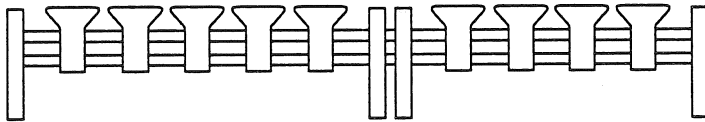
When the upper and lower blades are changed or their edges are rotated or reversed, adjust the blade clearance as described below.

NOTE

- When the machine is equipped with the optional blade clearance control panel, refer to "Blade clearance control panel" in Part VI Options.
- The optimum blade clearance is the worksheet thickness multiplied by 0.05 to 0.07. When the worksheet thickness is 3 mm or less, the blade clearance can be set constant at 0.04 to 0.05 mm without any problem.

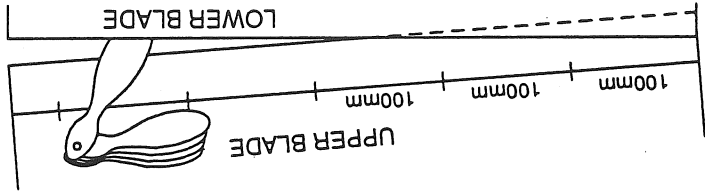


- 1 Check that the upper and lower blade attaching bolts are securely tightened.
- 2 Loosen the table clamping bolts (positioned in the upper left and right of the table) to a half-tightened condition.
- 3 Remove the finger protector.

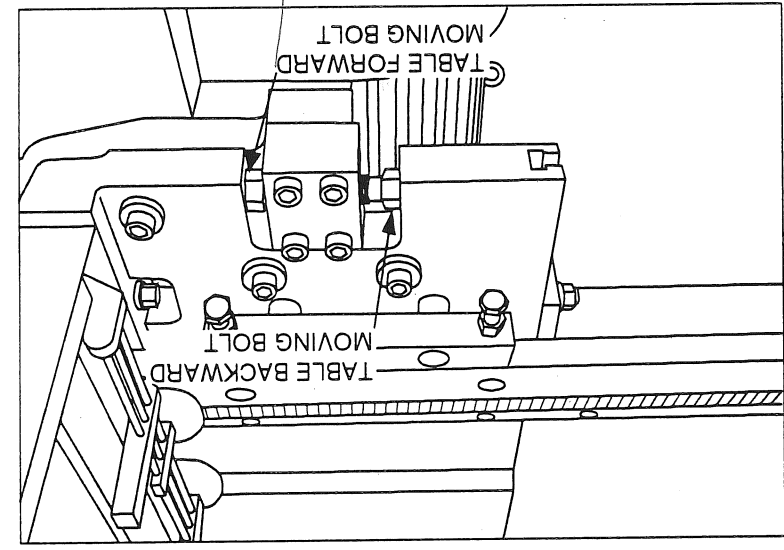


FINGER PROTECTOR

- 4 Turn the RUN/SET keyswitch to SET.
- 5 Turn the MODE keyswitch to INCHING.
- 6 Press the INCHING button together with the CONFIRMATION button to gradually lower the upper blade, and measure the blade clearance with thickness gauges.



HOLE IN FORWARD PLATE



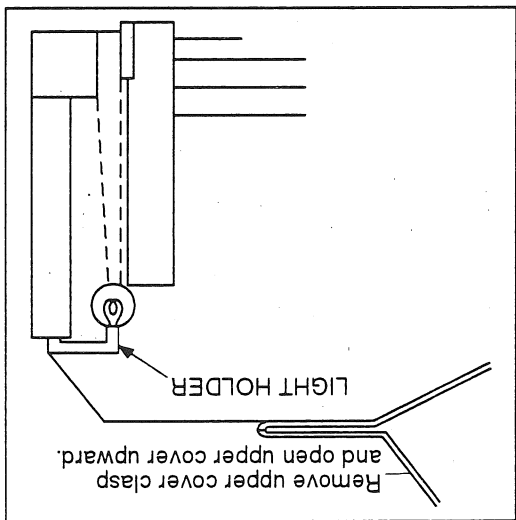
- 7 Move the table forward or backward about 0.1 mm each by alternately turning the table forward and backward moving bolts at the left and right sides of the table. Repeat this adjustment until the optimum blade clearance is obtained.
- 8 When the adjustment of the blade clearance is completed, securely tighten the left and right table clamping bolts, and replace the finger protector.



Adjusting beam light

CHANGING BULB

Remove a burn-out bulb by turning it about 20° counterclockwise while lightly pushing it against the socket and holding the light holder. Install a new bulb by reversing the procedure.

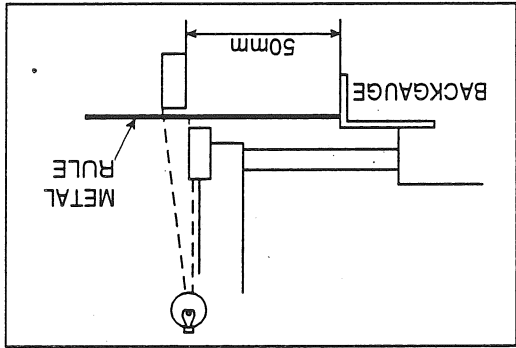


NOTICE

- Be sure to use an Amada genuine bulb (of special vibration-proof construction).
- When installing a new bulb, check that the insulation protection fiber installed between the socket and the light holder is not damaged.
- When the bulb change is completed, be sure to adjust the position of the beam light.

ADJUSTING POSITION OF BEAM LIGHT

- 1 Move the backgauge to the cutting width of 50 mm, and turn on the beam light.
- 2 Push the metal rule against the backgauge, check that the beam light boundary line falls on the 50-mm line of the rule, and check the following conditions.



- The blades are not worn.
- The contact surface of the backgauge is not locally worn or has no projections.
- The backgauge bolts and nuts are not loose.
- The blade clearance is suited for the thickness and material of the worksheet.
- The ram does not abnormally vibrate or heat.
- The ram guide is properly adjusted.
- The backgauge feed screws and guide shafts have no foreign matter or are not rusted.

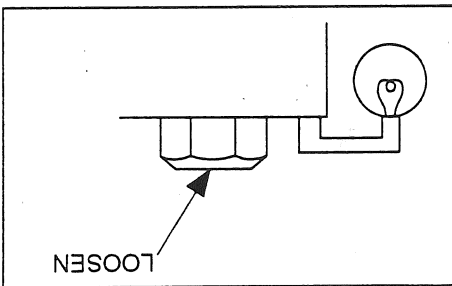
Check that:

INSPECTION BEFORE ADJUSTMENT

When the worksheet is not cut to the same width at the left and right sides of the backgauge, adjust the straightness and parallelism of the backgauge as described below.

Adjusting backgauge (cutting width)

- a) When the beam light is not clearly visible, loosen the socket clamping bolt in the light holder, and turn the socket to make the filament of the bulb vertical.
- b) When the necessary adjustment is completed, tighten each bolt, move the backgauge backward, and make a trial cut to see if the beam light properly agrees with the line scribed on the worksheet.



- a) When the beam light is out of the desired position, loosen the light holder fixing bolt, and move the light holder back and forth to adjust the position of the beam light.

CUTTING TEST SHEET

WARNING  Before removing the cut test pieces through the rear of the machine, turn the SHEAR STOP switch to ON.

1 Prepare a test sheet (1.6 mm thick by 200 mm wide by 500 mm long).


2 Turn on the shop circuit breaker.

3 Turn the handle of the machine circuit breaker to ON and the POWER ON/OFF keyswitch to "I" (ON) to turn on the power of the machine.

4 Press the MAIN MOTOR ON button to start the main motor and to turn on the MOTOR lamp.

5 Move the backgauge to the cutting width of 50 mm.

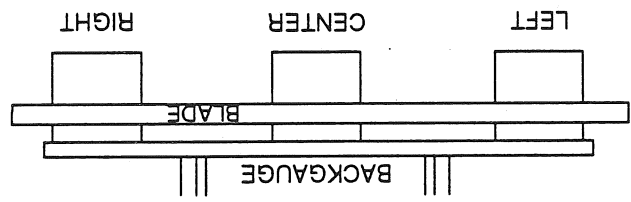
6 Turn the RUN/SET keyswitch to RUN.

7 Turn the MODE keyswitch to  (SINGLE).

8 Push the test sheet against each of the left, center and right of the backgauge, and cut it once at each position.

NOTICE

● Cut the test sheet separately at each position.



9 Measure the width of the three cut pieces. If the measured widths are different, the straightness or parallelism of the backgauge must be adjusted. Adjust the straightness or parallelism of the backgauge by referring to the figures shown below and to "Adjusting straightness of backgauge" on next page and "Adjusting parallelism of backgauge" on page V-21.

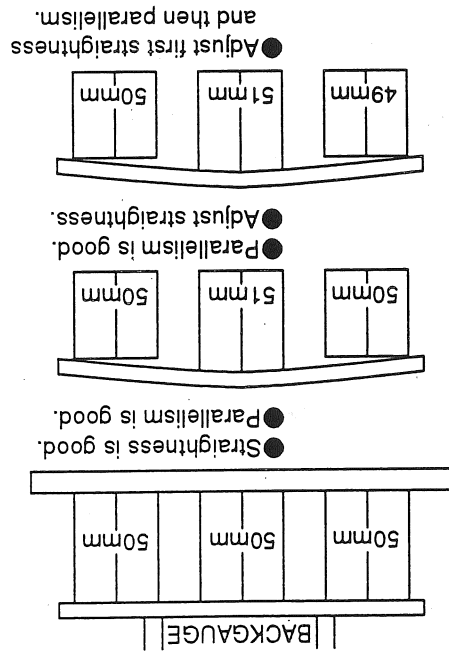
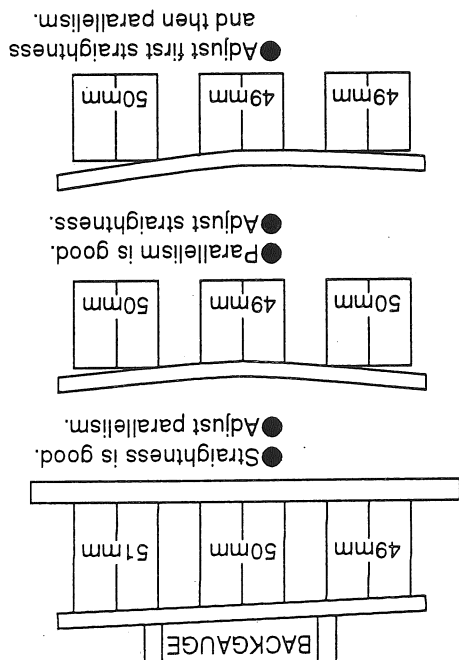
- 1 Press the MAIN MOTOR OFF button to stop the main motor and to turn off the MOTOR lamp.
- 2 Turn the POWER ON/OFF keyswitch to "O" (OFF) and the handle of the machine circuit breaker to OFF to turn off the power of the machine.
- 3 Turn off the shop circuit breaker.

WARNING

● Before removing the cut test pieces through the rear of the machine, turn the SHEAR STOP switch to ON.

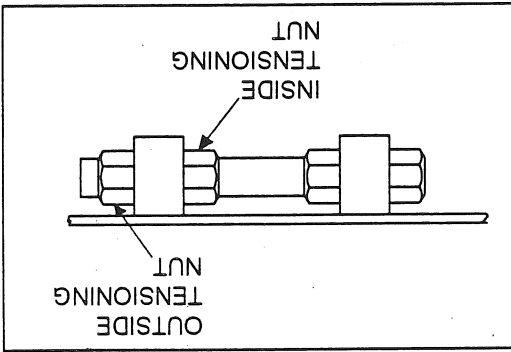
When the average width of the pieces cut at the left and right of the backgauge is different from the width of the piece cut at the center of the backgauge, adjust the straightness of the backgauge as described below.

ADJUSTING STRAIGHTNESS OF BACKGAUGE

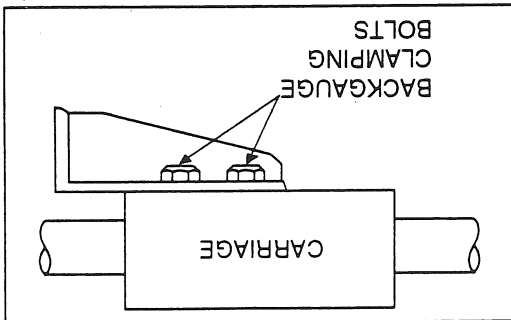


- 6 Completely tighten the backgauge clamping bolts.
 - 7 Turn on the shop circuit breaker.
 - 8 Turn the handle of the machine circuit breaker to ON and the POWER ON/OFF keyswitch to "I" (ON) to turn on the power of the machine.
 - 9 Press the MAIN MOTOR ON button to start the main motor and to turn on the MOTOR lamp.
 - 10 Cut the test sheet again to check the straightness of the backgauge.
- When the average width of the pieces cut at the left and right of the backgauge is the same as the width of the piece cut at the center of the backgauge, complete this adjustment procedure. If not, repeat the procedure from step 1 above.

- a) When the width of the piece cut at the center is greater than the average width of the pieces cut at the left and right, slightly loosen the inside tensioning nut, and tighten the outside tensioning nut.
- b) When the width of the piece cut at the center is smaller than the average width of the pieces cut at the left and right, slightly loosen the outside tensioning nut, and tighten the inside tensioning nut.




5 Turn the inside and outside tensioning nuts to adjust the straightness of the backgauge as follows:



4 Slightly loosen the bottom of the left and right carriages.

ADJUSTING PARALLELISM OF BACKGAUGE

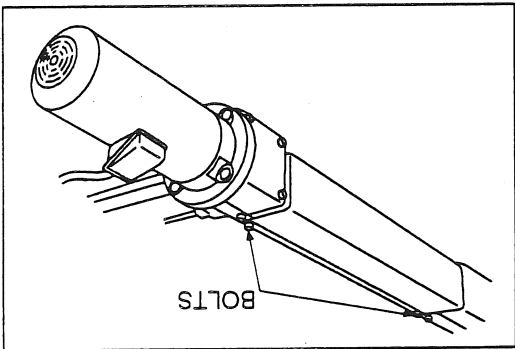
When the width of a piece cut at the left of the backgauge is different from that of a piece cut at the right of the backgauge, check that the straightness of the backgauge is properly adjusted, and then adjust the parallelism of the backgauge as described below.

	<p>WARNING</p> <p>● Before removing the cut test pieces through the rear of the machine, turn the SHEAR STOP switch to ON.</p>
---	---

- 1 Press the MAIN MOTOR OFF button to stop the main motor and to turn off the MOTOR lamp.

- 2 Turn the POWER ON/OFF keyswitch to "O" (OFF) and the handle of the machine circuit breaker to OFF to turn off the power of the machine.

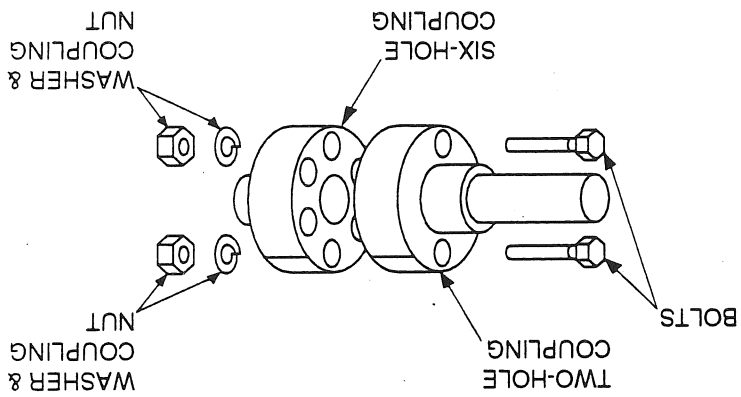
- 3 Turn off the shop circuit breaker.



- 4 Loosen the six bolts, and remove the backgauge coupling cover.

- 5 Mark the outside surfaces of the two couplings with chalk or ink. (This marking is convenient for checking the number of holes when turning the couplings.)

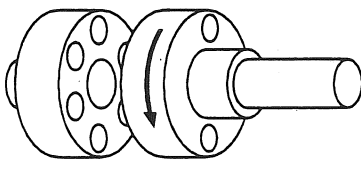
- 6 Remove the coupling nuts and washers, and remove the two bolts.



- 7 Turn either coupling in the direction of the arrow to adjust the parallelism of the baggauge as follows. (The parallelism of the baggauge is adjusted by 0.07 mm when the six-hole coupling is turned by one bolt hole.)
- 8 When the six-hole coupling is turned, engage the brake of the baggauge motor. To engage the brake, return the lever attached to the motor to the original condition.
- 9 Install the bolts in the couplings, and fix the couplings with the washers and the coupling nuts.
- 10 Replace the baggauge coupling cover.
- 11 Turn on the shop circuit breaker.
- 12 Turn the POWER ON/OFF keyswitch to "I" (ON) and the handle of the machine circuit breaker to ON to turn on the power of the machine.
- 13 Press the MAIN MOTOR ON button to start the main motor and to turn on the MOTOR lamp.
- 14 Cut the test sheet again at the left and right of the baggauge, and check that the two pieces are of the same width. If not, repeat the procedure from step 1 above.
- 15 When the adjustment of parallelism is completed, check that the test sheet is cut to the width of 50 mm.

If not, set the actual width of the cut piece as the current position of the baggauge. (Refer to "Setting current position of baggauge" on page V-7.)

a) When the width of the piece cut at the right of the baggauge is greater than that of the piece cut at the left of the baggauge, turn the two-hole coupling in the direction of the arrow.



b) When the width of the piece cut at the right of the baggauge is smaller than that of the piece cut at the left of the baggauge, disengage the brake, pull down the lever attached to the baggauge motor, and turn the six-hole coupling in the direction of the arrow. To disengage the brake, pull down the lever attached to the baggauge motor.

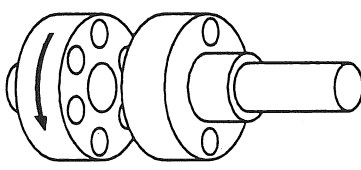
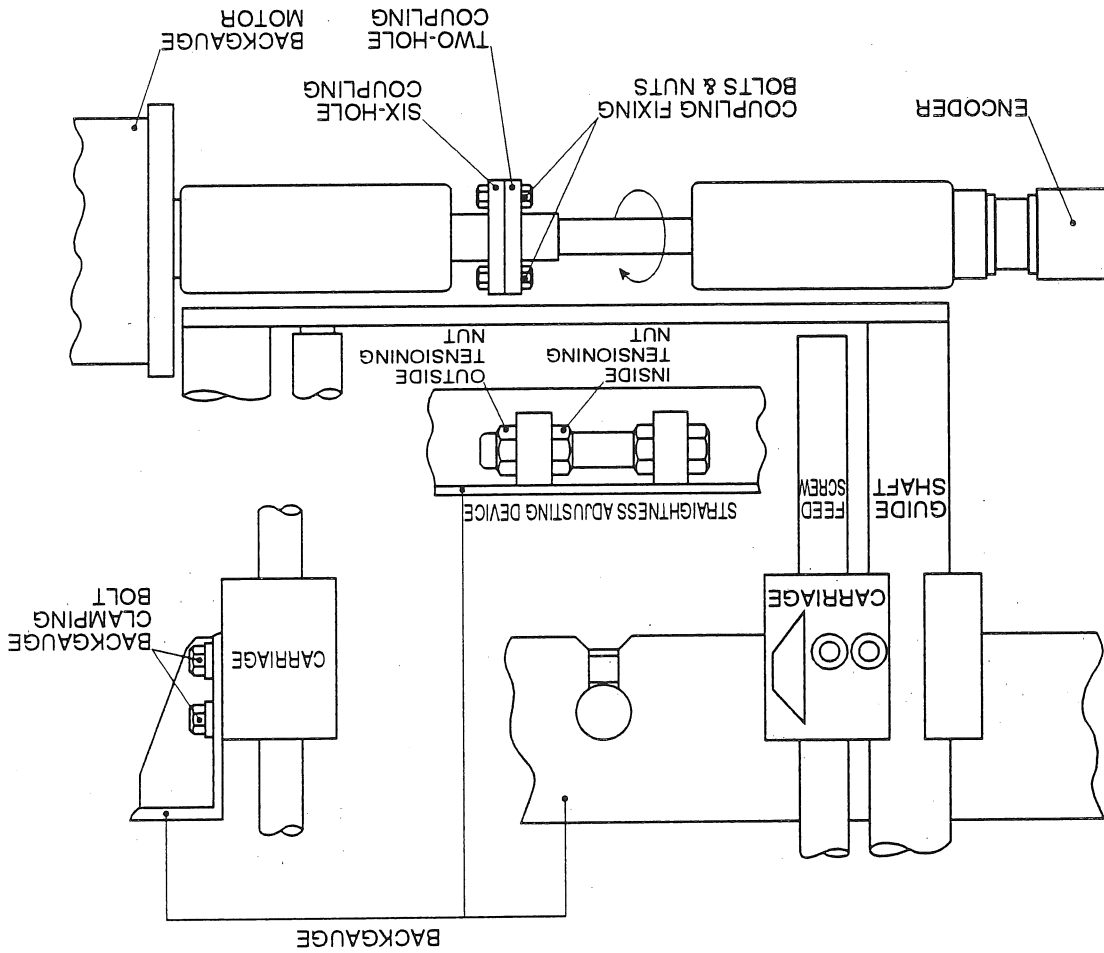


Diagram explaining methods for adjusting parallelism and straightness of backgauge



The Control unit is provided with a lithium battery for data backup. When the lithium battery runs down, the point at the right edge of the STATION-STEP display starts blinking. Change the battery as described below.

- 1 Turn off the power of the machine.
- 2 Remove the cover below the control box.
- 3 Remove the battery, and install a new one.
Battery type: Lithium battery FBT030A
- 4 Replace the cover.

Blade clearance control panel.....VI-2
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Part VI
Options

The optimum blade clearance changes with the material of the worksheet and should be set to suit the material of the worksheet to be cut. A narrow blade clearance generally produces good cut edges for aluminum and stainless steel.

NOTICE

(0.024")

● When cutting worksheets measuring about 0.6 mm or less in thickness, the minimum blade clearance must be readjusted by a special method. Contact the AMADA service engineer.

PRESETTING BLADE CLEARANCE

Setting blade clearance with blade clearance indicators

1 Press the MEM key to turn on the built-in LED (red) and invoke the memory mode as well as to blink the CUTTING WIDTH LED (red) of the CUTTING WIDTH display.

2 Press the left cursor key to blink the STATION LED (red) of the STATION-STEP display. Press the down cursor key (twice for entering a program or once for entering a cutting width) to blink the CLEARANCE LED (red) of the blade clearance indicator section.

3 Press either the left or right cursor key. Each time the left or right cursor key is pressed, the blinking blade clearance indicator changes. Stop pressing the left or right cursor key after checking that the desired blade clearance indicator has blinked. The blade clearance indicator that suits the present blade clearance stays on.

4 Press the START key to change the blade clearance. The blade clearance indicators sequentially come on until the blade clearance indicator that was blinked in step 3 above. When the preset blade clearance is reached, the READY lamp (green) comes on if the other conditions are met.

NOTE

● Once the blade clearance is set, it does not change when the power of the machine is turned off. Repeat steps 1 to 4 above to change the blade clearance.

When the present blade clearance agrees with the target blade clearance, the blade clearance indicator (green) concerned stays on.

NOTICE

● When a worksheet is cut with an improper blade clearance, the blades may be damaged.

Setting blade clearance to suit worksheet thickness and material

1 Press the MEM key to turn on the built-in LED (red) and invoke the memory mode as well as to blink the CUTTING WIDTH LED (red) of the CUTTING WIDTH display.

2 Press the left cursor key to blink the STATION LED (red) of the STATION-STEP display. Press the down cursor key (thrice for entering a program or twice for entering a cutting width) to blink the THICKNESS LED (red) of the worksheet thickness and material indicators section.

3 Enter the thickness of the worksheet in 0.1-mm increments with the numeric keys. →

4 Press the down cursor key to blink the MATERIAL LED (red), and press the left or right cursor key to turn on the worksheet material indicator for the worksheet to be cut.

5 Press the SET key to blink the best suited of the blade clearance indicators (green) in the blade clearance indicator section.

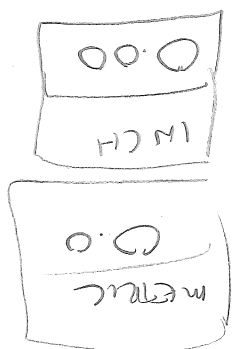
6 Press the START key to change the blade clearance. The blade clearance indicators sequentially come on until the blade clearance indicator that was blinked in step 5 above. When the preset blade clearance is reached, the READY lamp (green) comes on if the other conditions are met.

NOTE

● Unless the SET key is pressed, the blade clearance cannot be changed by pressing the START key. Once the blade clearance is set, it does not change when the power of the machine is turned off. Repeat steps 1 to 6 above to change the blade clearance. When the present blade clearance agrees with the target blade clearance, the blade clearance indicator (green) concerned stays on. ● It is recommended to set the blade clearance with the blade clearance indicators for entering a cutting width (at station 0) and according to the worksheet material and thickness for entering a program (at stations 1 to 9).

NOTICE

● When operating the machine as programmed, only one blade clearance can be set per program. Enter different programs for cutting worksheets of different thickness or material. When the blade clearance is set at any step in a program, it applies to all steps of the program when the program is started.



Alarm No.	Symptom or description	Remedy
Er11	Excessive blade clearance	Press right cursor key.
Er12	Insufficient blade clearance	Press left cursor key

The alarm numbers and their meanings are shown in the table below. Clear each alarm as described in the "Remedy" column of the table.

ALARMS

● If the left or right cursor key continues to be held down after the lighting of the MIN or MAX indicator, an overtravel alarm is caused.

NOTE

When the left and right cursor keys are pressed without pressing the MEM key, the blade clearance indicators change, and so does the blade clearance. The blade clearance can be manually set during program operation if the ram is positioned at the top dead center and if the positioning of the backgauge is completed. Use this method to finely adjust the blade clearance during machine operation.

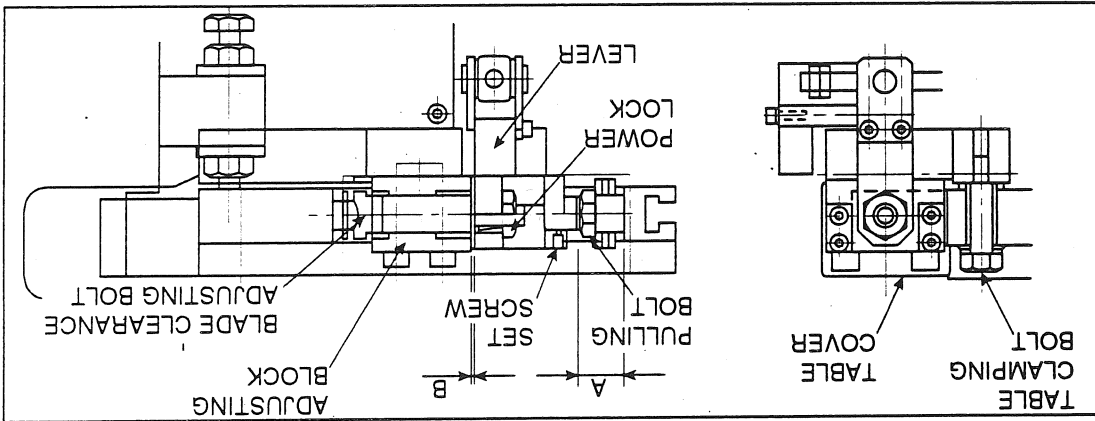
MANUALLY SETTING BLADE CLEARANCE

Material type	4.5-mm Thickness Specification	6.0-mm Thickness Specification
HRS (Hot Rolled Steel)	4.5 mm	6.0 mm
S.STL (Stainless Steel)	3.0 mm	5.0 mm
CRS (Cold Rolled Steel)	4.5 mm	6.0 mm
AL (Aluminum)	6.0 mm	9.0 mm

● A worksheet thickness greater than the value shown below for each type of worksheet material cannot be entered. If a wrong entry is made, the THICKNESS display blinks. This condition cannot be cleared unless a correct entry is made.

Handwritten notes:
 A (0.126) mm
 0.3 mm = 3.126
 CRU (0.121) mm
 MAX ≈ 8.0%
 S1 (0.22) ALUMINUM AND
 0.2 OF THICK = 3.6% #132

- 1 Check that the upper and lower blade attaching bolts are securely tightened.
- 2 Remove the finger protector.
- 3 Remove the table covers at the left and right sides of the table.



Adjust the initial blade clearance when the machine is to be operated for the first time, when the upper and lower blades are changed, or when otherwise required.

The adjustment of the initial blade clearance is important not only to ensure the correct operation of the blade clearance indicators, but also to prevent the jamming of the upper and lower blades.

ADJUSTING BLADE CLEARANCE

- 5 When the necessary adjustment is completed, securely tighten each bolt and nut. Remove the plate inserted between the nut and washer of each table clamping bolt, and securely tighten the bolt.
- 6 Lock the table support jack bolts.
- 7 After making two to three test cuts with a 3.2-mm or 4.5-mm thick worksheet over the length of the lower blade, check the height of the lower blade top surface and the table surface, and check that there is no clearance between the lower blade bottom surface and the lower blade support plate.
- 8 If there is any clearance between the lower blade bottom surface and the lower blade support plate, repeat steps 2 to 7 above.
- 8 Retighten each bolt and nut to complete the adjusting procedure.

To meet the specified value in the table above, turn the pulling bolt until the Belleville spring tightly shuts, and then return the pulling bolt by 180° for M-1245 to M-2560 and by 90° for M-3045 to M-4065.

Model	Specified Value
M-1245, M-1260, M-2045, M-2060, M-2545, M-2560	22.7 ± 0.2 mm
M-3045, M-3060, M-4045, M-4065	21.9 ± 0.2 mm



Measure the dimension A of the pulling blot with a vernier caliper or the like, and adjust it so that the Belleville spring load becomes as specified in the table below.

9 Using the accessory offset wrench, loosen the power lock connecting the lever to the blade clearance adjusting bolt at each side of the table. Loosen the set screw locking the pulling bolt.

10 Using the blade clearance adjusting bolt and pulling bolt, move the table forward or backward to adjust the blade clearance to the standard value of 0.04 to 0.07 mm.

8 Measure the blade clearance, and check that the measured blade clearance falls within the specified range of 0.04 to 0.07 mm. a) If the measured blade clearance falls within the specified range of 0.04 to 0.07 mm, replace the table covers and finger protector, and complete the adjustment procedure. b) If the measured blade clearance does not fall within the specified range of 0.04 to 0.07 mm, turn the POWER ON/OFF keyswitch to "O" (OFF), and adjust the blade clearance by referring to "Adjusting lower blade in vertical direction" on page VI-6.

(.0015 ~ .0028)

● Before step 7 above, check that the upper and lower blades are not jammed. If they are likely to jam, widen their clearance beforehand.

NOTICE

7 Press the INCHING button together with the CONFIRMATION button to gradually lower the upper blade, and measure the blade clearance with thickness gauges between the upper and lower blade attaching bolts. Check that the "MIN" blade clearance indicator is turned on. The blade clearance is minimum in this condition.

6 Hold down the left cursor key to show the alarm "Err1". Press the right cursor key to clear the alarm.

5 Start the main motor, and turn the MODE keyswitch to ① (INCHING).

4 Turn the RUN/SET keyswitch to SET.

11 When the adjustment of the blade clearance is completed, tighten the power lock. Then leave a clearance of about 4 to 5 mm between the adjusting block and the lever. If the lever is in contact with the adjusting block, sufficient torque may not be transmitted to the adjusting screw. *power lock*

NOTICE

● Use the accessory offset wrench. Never use pipe or the like.

12 Securely tighten the set screws of the left and right pulling bolts, and replace the covers and finger protector.

Pneumatic sheet support lower delay time set switch

The time required for the pneumatic sheet support to start lowering after the depression of the foot switch can be set to allow the pneumatic sheet support to lower after the holdowns have moved down. This time is preset at 0.10 second when the machine is shipped from the factory. When the worksheet is drawn between the upper and lower blades as it is cut, change the preset time. Press the SET key, the MAN key and the up cursor key at the same time to show the time in 1/100-second increments on the CUTTING WIDTH display, and change the time with the numeric keys. (The maximum time is 0.20 second.)

[34]Pneumatic sheet support T-SET key

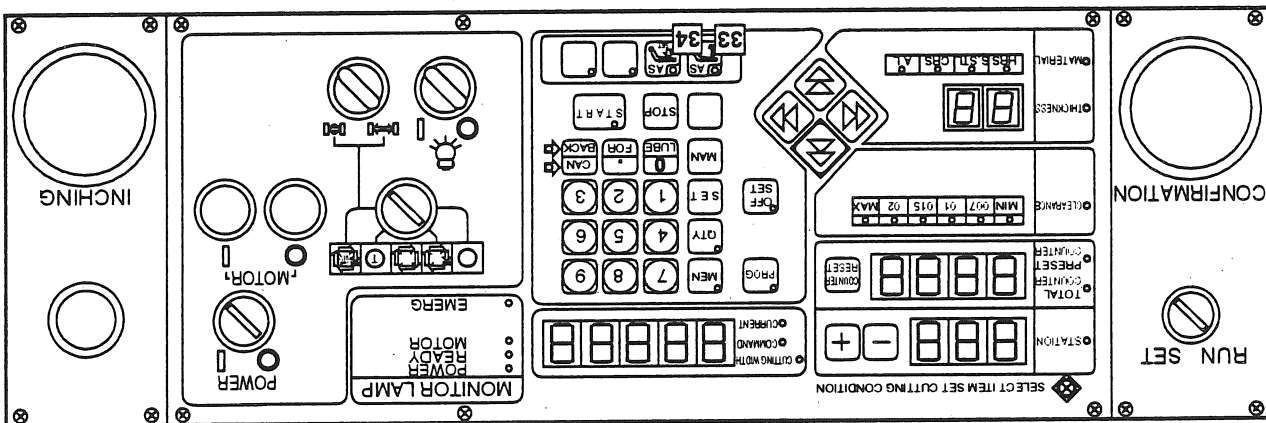
Used to set the time from the lowering to the rising of the pneumatic sheet support.

Pressed to turn on the built-in LED (green) and to show the preset rise time on the CUTTING WIDTH display. (This time is preset at 0.5 second when the machine is shipped from the factory.) Using the numeric keys and the /FOR key, enter the time required for the blanks to slide down the chute.

Pressed again to turn off the built-in LED and to return the CUTTING WIDTH display to the original condition.

[33]Pneumatic sheet support ON/OFF key


Pressed to turn on the built-in LED (green) and to raise the pneumatic sheet support. Pressed again to turn off the built-in LED and to lower the pneumatic sheet support.





Description


PNEUMATIC SHEET SUPPORT

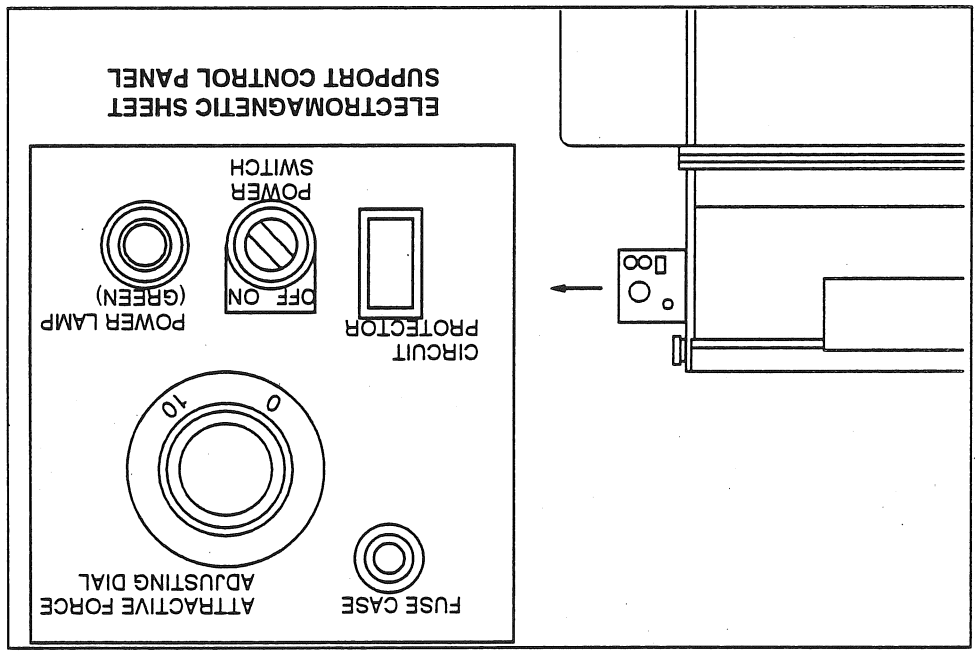
Using pneumatic sheet support

WARNING  The pneumatic sheet support cannot be used in any mode other than SINGLE and AUTO. Small pieces may fall through the holes notched in the chute of the pneumatic sheet support.

- 1 Turn the MODE keyswitch to  (SINGLE) or  (AUTO).
- 2 Position the backgauge at the cutting width.
- 3 Press the pneumatic sheet support ON/OFF key to raise the pneumatic sheet support.
- 4 The pneumatic sheet support will lower during the cutting operation and rise after the elapse of the preset time.

Using electromagnetic sheet support

- 1 Turn the POWER ON/OFF keyswitch to "I" (ON), and press the MAIN MOTOR ON button to start the main motor.
- 2 Turn the power switch on the electromagnetic sheet support control panel to ON to turn on the power lamp.
- 3 Turn the MODE keyswitch to  (OFF).
- 4 Position the backgauge at the cutting width.
- 5 Adjust the attractive force adjusting dial. The optimum attractive force is such that the worksheet is lightly fed and is not detached from the electromagnetic sheet support.



ELECTROMAGNETIC SHEET SUPPORT

Description

